



GRAND ERIE DISTRICT SCHOOL BOARD

Head Office: 349 Erie Avenue, Brantford, Ontario N3T 5V3

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Cover Page

BID DOCUMENT

REFERENCE NO. 2024-66-T

**NEW CHILDCARE CENTRE ADDITION AT BANBURY HEIGHTS
SCHOOL FOR THE GRAND ERIE DISTRICT SCHOOL BOARD**

INVITATIONAL DATE: May 30, 2024

CLOSING DATE: July 3, 2024

**CLOSING TIME: NOT LATER THAN 2:00:00 o'clock p.m. LOCAL TIME IN
BRANTFORD, ONTARIO**

BIDS RECEIVED AFTER THE CLOSING DATE AND TIME WILL BE REJECTED.

Note: Bids MUST be submitted ELECTRONICALLY.

**A pre-bid meeting is scheduled for Tuesday June 11th, 2024 at 10:00 a.m. at
Banbury Heights School – 141 Banbury Rd., Brantford. Please refer to Section 18
Pre-Bid Meeting.**

Questions related to the Bid Call are required to be directed in writing to the following
Designated Contact:

Laura Mels,
Supervisor of Purchasing Services
Laura.mels@granderie.ca

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SECTION 00200 – INSTRUCTIONS TO BIDDERS

1. DEFINITIONS

1.1. In addition to the definitions found in the CCDC 2-2020, the following definitions shall apply to all Tender/Contract Documents:

- a. “Bid” means the Tender submission by a Bidder
- b. “Bid Form” means the Grand Erie District School Board’s Price Bid Form as issued by the Board.
- c. “Bidder” means the organization/contractor submitting a Bid for General Contractor Services in response to this Request for Tender. Bidder is the term mainly used in the Instruction to Bidders, Owners Conditions and Price Bid Form.
- d. “Board” means the Grand Erie District School Board. Board is the term mainly used in the Instruction to Bidders, Owners Conditions and Price Bid Form.
- e. “Changes in the Work” means additions, deletions, or other revisions to the Work approved in advance in writing by the Consultant or the Board and relate to the general scope of the Contract as determined by the Board.
- f. “Closing Date” means the deadline for Tender submissions, being the date indicated in this Request for Tender.
- g. “Mandatory” means an item that is required, obligatory, or compulsory.
- h. “Successful Bidder” means the Bidder with the lowest compliant Bid who is awarded the Contract by the Board and accepts the Contract within the required timelines as indicated in the Contract Documents. The term Successful Bidder is used mainly in the Instructions to Bidders, Owners Conditions and Price Bid Form.
- i. “Tender” means a response from a supplier, Contractor or service provider to a solicitation request that, if recommended for award, would bind the supplier, Contractor or service provider to perform in accordance with the Contract.
- j. “Total Performance of the Work/Completion of the Contract” means when the entire Work, except those items arising from the provisions of GC 24 – WARRANTY, has been performed to the requirements of the Contract

Documents and is so certified by the Consultant by issuance of a “Statement of Completion of the Contract”.

2. DESCRIPTION OF PROJET AND TENDER NUMBER

- 2.1. The Board invites qualified Bidders for Contractor Services to Bid for the supply of all labour, materials, equipment and services required for the completion of a **new childcare centre addition at Banbury Heights School – 141 Banbury Rd., Brantford** for the Grand Erie District School Board in accordance with the drawings and specifications prepared by Grguric Architects Inc.
- 2.2. The Tender Number for this Project is 2024-66-T.

3. TENDER FOR STIPULATED PRICE BID INSTRUCTIONS

- 3.1. Prior to the submission of the Stipulated Price Bid, all Bidders shall carefully examine the Bid Form, the Contract Documents and fully inform themselves of the existing conditions and limitations of the Work.
- 3.2. If there exists doubt in the Bidders mind as to the intent of any information shown on the Bid Form or Contract Documents, the Bidder must request clarification from the Owner prior to submission of the Bid.
- 3.3. Submitted Stipulated Price Bid shall cover the cost of all items contemplated by the Contract and no allowance shall be made subsequently in this regard on behalf of the Bidder for any error or negligence on the Bidder’s part.
- 3.4. The Bidder, by submitting a Stipulated Price Bid, acknowledges and accepts the terms set out herein ad in any other documents included in this Request for Tender.
- 3.5. Bids submitted must be completed in full and must be legible and written in ink or by mechanical device. The Bid must not be restricted by any conditions, or qualifications added to the Bid in the form of a covering letter or alterations to the Bid Form provided; any such conditions or qualifications will render the Bid non-compliant and ineligible for acceptance.
- 3.6. Adjustments by telephone to a Bid already submitted will not be considered. A Bidder desiring to make adjustments to a Bid must withdraw the Bid and/or supersede it with a later Bid prior to the specified closing deadline.
- 3.7. Each instance of erasures, overwriting, strike-outs or white-outs must be initialled by an authorized company representative of the bidding firm.

- 3.8. Any costs incurred in the preparation and submission of a Bid Form are solely the responsibility of the Bidder.
- 3.9. No Oral, Hardcopy, Facsimile or Telegraphic Bids will be accepted.
- 3.10. Failure to comply with the requirements of these Instructions to Bidders may cause a Bid to be declared invalid and such Bid may be rejected, in the sole and unfettered discretion of the Board.

4. GENERAL BID SUBMISSIONS

- 4.1. Bids for Bid Number 2024-66-T must be submitted electronically through the Biddingo portal. Physical/paper copies of bids will NOT be accepted.

Submissions MUST be made through the following public portal: www.biddingo.com. Grand Erie relies on Biddingo.com's electronic advertisement to provide public notice of this business opportunity and is not obligated to notify past or present Proponents in any other manner.

To access the bid form and start your submission, click the Bid Documents / Online Submission. For technical support, please contact Biddingo.com directly at 1-416-756-0955 or via email at ebidding@biddingo.com. Biddingo.com offers free eBidding training sessions. Sign up today at www.biddingo.com/training. Proposals cannot be submitted after the Bid Submission Deadline. Each Proponent is responsible for ensuring its Bid is submitted prior to the Bid closing date and time.

A Proponent should allow sufficient time in the preparation of its Bid to ensure its Bid has been uploaded and completed the submission process on Biddingo.com by the Submission Deadline. Uploading large documents may take significant time, depending on the size of the file(s) and Internet connection speed. Bid's that are uploaded onto Biddingo.com but not submitted before the closing deadline will be deemed late, and thus rejected.

A Proponent may withdraw its Bid by providing written notice to the Bid Coordinator before the Bid Submission Deadline, and by selecting the "Withdraw my eBid Response" button provided within the Bid on Biddingo.com.

- 4.2. Bidders are solely responsible for the delivery of their Bids in the manner and by the date and time prescribed by Owner. Each Bidder is responsible for the actual delivery of its Bid to the address and location above and Bids will not be considered unless actually received at that location prior to the Closing Time on

the Closing Date regardless of whether the Bids have been given to couriers, delivery services, Canada Post or employees or agents of the Owner.

- 4.3. Bids must be received **NOT LATER THAN 2:00:00 o'clock p.m. LOCAL TIME IN BRANTFORD, ONTARIO (the "Closing Time") on July 3, 2024 (the "Closing Date")**.
- 4.4. Bidders are required to complete and submit section 00410 with the Bid prior to Bid Closing, together with Addenda, if any, unless the No.(s) of all Addenda issued are identified in the Bidder's Declaration.
- 4.5. Bids received after the Closing Time on the Closing Date will be rejected. Bids shall not be submitted by fax or email. Bids submitted by fax or email will be rejected.

5. BID SECURITY

5.1. As per Article GC 11.2 Sub-section 11.2.1 and 11.2.2 of the General Conditions and 11.2.3 of the Amended General Conditions and as hereinafter set out:

a. AGREEMENT TO BOND

- i. Submit an Agreement to Bond from a licensed Canadian Surety Company authorize to do business in the Province of Ontario.
- ii. The Agreement to Bond shall remain in force for the complete Tender acceptance as noted above.

6. CONTRACT SECURITY

6.1. For Construction Services greater than \$500,000, the Contractor shall, prior to the execution of the Contract and within (10) business days of being notified that's its Bid has been accepted, provide to the Board the below noted bonds. The bonds shall be issued by a duly licenced surety company authorized to transact a business of suretyship in the Province of Ontario and shall be maintained in good standing until the fulfillment of the contract. The expense of preparing the bond and executing is to be solely the responsibility of the Contractor.

a. PERFORMANCE BOND

- i. Performance security will be required to be submitted by the Successful Bidder before execution of the Contract. Performance security must be in the form of Form 32 Performance Bond and Form 31 Labour & Material payment Bond for

the sum of fifty percent (50%) of the Contract Price. See Section 12 of the Construction Act. <https://www.ontario.ca/laws/regulation/180304>

ii. The Bidder shall include the cost of such Bond in the Bid Submission.

b. LABOUR AND MATERIAL PAYMENT BOND

i. Labour and Material Payment Bond, in accordance to the Construction Act of Ontario (Form 31), in an amount equal to fifty percent (50%) of the Contract Price covering payment for labour, products, or both.

ii. The Bidder shall include the cost of such Bond in the Bid Submission.

6.2. The Successful Bidder shall furnish the performance security to the Board, prior to the execution of the Contract, within ten (10) business days of being notified that its Quotation has been accepted.

6.3. In the event of default or failure of the Successful Bidder to execute the Contract as prescribed, or to deliver the performance and other required submittals under the Quotation documents, the Board shall declare the bid security forfeited and the Bidder will be held responsible for any increased costs or damages incurred by the Board.

7. WORKER'S COMPENSATION

7.1. The Successful Bidder must provide a copy of their Workplace Safety and Insurance Board Clearance Certificate of good standing, "Section 748" of the Workplace Safety and Insurance Act to the Board prior to commencing Work and in the event within ten (10) Working Days of acceptance of the Bid by the Board.

8. INDEMNITY AND INSURANCE

8.1. As per the CCDC 2-2020 and Amended General Conditions.

9. ELECTRONIC NOTICE OF PROJECT

9.1. The Successful Bidder must submit Form 1000: Registration of Constructors and Employers Engaged in Construction to the Ontario Ministry of Labour and provide the Board with a copy of the completed and submitted form.

10. SUBMISSION REQUIREMENTS

10.1. Bids will automatically be rejected under the following circumstances:

a. Bid is late (by any amount of time).

- b. Bid security
 - i. Agreement to Bond is missing at least one (1) of the following: corporate seal to bind the bonding company or signature of bonding company.
- c. Bid is not signed.
- d. Stipulated Price Bid is illegible or not entered.

11. SALES TAX

- 11.1. The Bid and separate prices submitted for this Contract shall exclude the Harmonized Sales Tax (HST).
- 11.2. For purposes of calculating costs of extra Work performed, any HST paid by the Successful Bidder to Suppliers or Subcontractors shall be deducted prior to any mark-up profit or overhead by the Successful Bidder.
- 11.3. The Successful Bidder will not be permitted to add any mark-up for overhead or profit to the HST amount or to claim for any time involved in processing or collecting the HST and for its remittance to Canada Revenue Agency.

12. ACCEPTANCE OR REJECTION

- 12.1. Bids shall remain open to acceptance for a period of forty-five (45) calendar days commencing on and including the date set for receipt of Bids, and the Board may at any time within this period accept any of the Bids received.
- 12.2. The Board reserves the right to accept or reject any and all Bids and to accept any part of any one Bid. The Board may request further clarification of a Bid from the Bidder. While the Board is not obligated to consider Bids which do not strictly comply with its requirements, it nevertheless reserves the right to do so, and specifically reserves the right to waive formalities and accept Bids that the Board deems to be substantially compliant.
- 12.3. Notwithstanding anything herein to the contrary, if any Bid contains technical errors or omissions which the Board, in its sole and unfettered discretion deems to be minor, the said Bidder may be asked by the Board to acknowledge and/or clarify those minor technical errors or omissions prior to the award of the Contract.
- 12.4. The Board and the Consultant shall not be responsible for any liabilities, cost, expenses, loss or damage incurred, sustained or suffered by any Bidder prior

or subsequent to or by reason of the acceptance or the non-acceptance by the Board of any Bid or by reason of delay in the acceptance of a Bid. Bids are subject to a formal Contract being prepared and executed.

- 12.5. The Board will award the Contract based on the total value of the base bid plus accepted separate prices.

13. BIDDER QUALIFICATIONS

13.1. Bidders interested in performance of specified Work must:

- a. Have a minimum of ten (10) year work experience with materials specified or similar comparable products,
- b. For Roofing Subcontractor be a member in good standing with Ontario Industrial Roofing Contractors Association (O.I.R.C.A.),
- c. And be licensed and insured for Place of Work.
- d. Bidder's installers must be certified and carded for installation of the specified materials.
- e. Bidders employees must WHMIS certified.

13.2. Bidder's Subtrades:

- a. Must have a minimum of ten (10) years work experience with materials specified or similar comparable products,
- b. Must be licensed and insured for Place of Work.
- c. Must be certified and carded for installation of the specified materials.
- d. Employees must be WHMIS certified.
- e. Owner reserves the right to reject any proposed Subcontractor for reasonable cause

13.3. Roofing Subcontractor:

- a. Must be pre-approved and certified by Membrane Manufacturer for specified materials and installation type.

- b. Must be a member in good standing with Ontario Industrial Roofing Contractors Association (OIRCA)
 - c. Owner reserves the right to reject any proposed Subcontractor for reasonable cause.
- 13.4. Roofing Contractor must be pre-approved and certified by Membrane Manufacturer for specified materials and installation type.
- a. Contractor's installers must be certified and carded for installation of specified materials.
 - b. Contractor's employees and Subcontractors must be WHMIS certified.
 - c. Owner reserves right to reject any proposed Subcontractor for reasonable cause.

14. TENDER DOCUMENT AVAILABILITY

- 14.1. Bid Documents are to be obtained at www.biddingo.com

15. QUERIES/ADDENDA

- 15.1. Upon receipt of Bid Documents verify that documents are complete; notify the Board representative should the documents be incomplete.
- 15.2. Should a Bidder find discrepancies in, or omissions from the Drawings, Specifications or other Documents, or should there be doubt as to their meaning, the Bidder shall notify the Board representative before the Tender Closing Date.
- 15.3. Direct all inquires in writing only to Purchasing at email:
Laura.mels@granderie.ca no later than **one (1) week prior to the Closing Date**. Identify the reference number and project name in the subject line.
- 15.4. The Board, in consultation with the Consultant will review all questions and issue written instructions in the form of an Addendum, which will become part of the Contract Documents.
- 15.5. The Closing Date of the Request for Tender may be extended as deemed appropriate by the Board. Include costs of any changes in the Bid and separate prices.

15.6. Replies to questions will be made in the form of written addenda, a copy of which will be forwarded to all Bidders.

15.7. Bidders shall ask all required questions prior to submitting their Bid.

16. EXAMINATION OF DRAWINGS, SPECIFICATIONS AND WORK SITE

16.1. Carefully examine and study all Bid Requirements together the existing site conditions and any other necessary data or conditions that may affect performance of Work in order to determine full extent of the Work.

a. Under no circumstances will any claims be allowed against Owner resulting from failure to ascertain full extent of the Work herein described, specified or implied.

16.2. Contractor to verify to own satisfaction that existing site conditions, roof components, and measurements are accurately reported in the Bid Requirements. Obtain or check all measurements and dimensions at worksite as may be necessary and require for performance of Work.

16.3. Promptly report in writing any discrepancies, errors, conflicts, or omissions to Consultant when discovered and prior to Bid Closing.

a. Drawings, specifications and schedules are complementary to each other, what is called for by one to be binding is called for by all.

b. Should any discrepancy appear between documents leaving doubt as to intent or meaning, most stringent requirement to govern unless directed otherwise in writing by the Consultant.

16.4. Bid submission to be based on products, equipment, and/or suppliers named and identified as approved or accepted in technical specifications and drawings.

a. Bid Documents constitute acceptable roofing installations.

b. No deviation from specifications, drawings or approved shop drawings are allowed without prior written approval by Consultant, and if applicable by Manufacturer,

16.5. Unless specifically identified in the Bid Requirements, any hazardous materials encountered during Work that requires specialized handling and incurs additional cost is to be added to the Contract Price

16.6. Weather conditions are considered incidental to Work and will not be considered additional to Bid Price.

17. ALTERNATES – PRODUCTION/SYSTEM OPTIONS

- 17.1. Where the Bid Documents stipulate a particular Product and/or service, the Bid Sum will be based upon the specified Product/service. Bidders must quote as specified.
- 17.2. If a Bidder has an alternate product and/or service that they wish to propose for the Board's consideration, they may suggest alternates in the Alternative Pieces section of the Price Bid Form.
- 17.3. Bidders who suggest alternates shall also include complete details about the alternates including specifications, modifications, and revisions to other work for each alternative to enable the Consultant and the Board to determine the acceptability of such alternates.
- 17.4. If quoting an alternate, Bidders shall include the dollar amount of additions to or reductions from the Bid Price, including all costs of revisions/modifications to other work.
- 17.5. The Board in its sole and unfettered discretion reserves the right to accept or reject alternates.

18. PRE-BID MEETING

- 18.1. Bidders are recommended to attend the site visitation scheduled on **Tuesday June 11, 2024 at 10:00 a.m.** at Banbury Heights School – 141 Banbury Rd., Brantford.
- 18.2. When planning to enter a Board building strict adherence to the Grand Erie Protocols and the Health Unit's measures are expected
- 18.3. Do not enter if you or your staff have been identified for self-isolation as per the Federal and Provincial Public Health Leaders recommendations
- 18.4. All site visit attendees Must sign in upon entering the building
- 18.5. If you or your staff feel sick or experience flu like symptoms after the site visit, contact the Designated Contact

19. SUBCONTRACTORS

19.1. Prior to the award of the Contract to a Bidder, should objection be raised by either the Board or Consultant to any proposed Subcontractor, the names of other Subcontractors shall be obtained by that said Bidder until same are approved. Once final approval of Subcontractors is obtained no change will be permitted by the Successful Bidder without prior written approval by the Board and Consultant.

20. PROJECT SCHEDULE

20.1. Outline for Project Schedule

Event	Date
Request for Tenders Available to Bidders	May 30, 2024
Site Meeting	June 11, 2024 at 10:00 a.m.
Bids Due	July 3, 2024 by 2:00:00 p.m.
Work Start Date	July 15, 2024
Substantial Performance of the Work	May 30, 2025
Deficiency List Walk Through	June 2, 2025
Total Performance of the Work	June 30, 2025

21. TIME OF COMPLETION

21.1. Successful Bidder shall meet the Board’s substantial completion date as stated in the Price Bid Form.

22. CONSTRUCTION DRAWINGS

22.1. The Board will provide the Successful Bidder up to five (5) sets of drawings for construction and as-built purposes. If the Contractor requires additional sets, the Contractor shall obtain the prints at their own expense.

23. EXISTING BUILDING SERVICES

23.1. The Successful Bidder shall assess the existing building services and determine that they are in proper working order prior to construction. Existing building services shall include but not limited to, fire alarm system, security system, PA system, Telephone and Data systems. If the Successful Bidder has any concerns they must be reported in writing to the Consultant and the Board prior to commencement of Work.

- 23.2. On or before the completion of the Project, if the existing building services are not operating as they were prior to the Successful Bidder commencing Work, the Successful Bidder being aware that an existing building services is not in operation, they shall immediately notify the Board and take the necessary actions to repair the system.

24. NO SMOKING POLICY

- 24.1. All Bidders are advised that there is no smoking permitted within the school or within 20m or 60ft of Board property, and this must be strictly adhered to by all parties. The Successful Bidder shall be responsible for advising their employees or any other persons doing or contracting to do the whole or any part of the Work contemplated by the Contract, or the foregoing.

25. COVID PROCEDURE WHEN IN PLACE

- 25.1. When planning to enter a Board building strict adherence to the Grand Erie Protocols and the Health Unit's measures are expected.
- 25.2. Any Bidder/Contractor employees who enter a Board building MUST complete the COVID Self Assessment form before entering any Owner site. If you or your staff are feeling sick do not enter (see your local Health Unit's website).
<https://covid-19.ontario.ca/school-screening/>
- 25.3. Do not enter if you or your staff have been identified for self-isolation as per the Federal and Provincial Public Health Leaders recommendations.
- 25.4. All Bidder/Contractor employees Must sign in upon entering the building.
- 25.5. If you or your staff feel sick or experience flu like symptoms after the site visit, contact the Designated Contact.
- 25.6. Wash your hands often with soap and water, or use hand sanitizer, before/during/after entry into any Owner building.
- 25.7. Entry into and Owner site requires the wearing of an ASTM level 1 mask when COVID Procedure in place. If you do not have one, then you must wear a face covering to enter the building and an ASTM mask will be provided to you.
- 25.8. Practice physical distancing – stay 2m (6ft) apart from all other persons.
- 25.9. Contractor must be in compliance with Procedure HR106 – Covid-19 Immunization Disclosure:
https://granderie.ca/application/files/7016/3284/4671/HR106_COVID-19_Immunization_Disclosure.pdf

26. EXECUTION OF A CONTRACT AND BOARD'S PURCHASE ORDER

26.1. The Successful Bidder shall execute a CCDC 2-2020 Stipulated Price Contract in writing with the Board within ten (10) days after being notified in writing by the Board of the acceptance of the Bid. In the event that the Successful Bidder fails to execute a Contract within the said period, the Board in its sole unfettered discretion may rescind the selection of that Bidder, and make an offer to next lowest compliant Bidder or reject all Tenders.

26.2. A purchase order accepting a Bid will be issued by the Board to the Successful Bidder following the execution of the Contract.

27. RESERVED RIGHTS TO THE BOARD – GENERAL

27.1. In addition to any other express rights or any other rights which may be implied in the circumstances, the Board reserves the right to;

- a. Make public the names of any and all Bidders;
- b. Request written clarification or the submission of supplementary written information from any Bidder and incorporate such clarification or supplementary written information into the Bidder's Bid, at the Board's discretion, provided that clarification or submission of supplementary written information shall not be an opportunity for the Bidder to correct errors in its Bid or to change or enhance the Bidder's Bid in any material manner;
- c. Waive formalities and accept Bids that substantially comply with the requirements of this Request for Tender, in the Board's sole discretion;
- d. Verify with any Bidder or with a third party any information set out in a Bid;
- e. Disqualify any Bidder whose Bid contains misrepresentations or any other inaccurate or misleading information, or whose Bid is determined to be non-compliant with the requirements of the Request for Tender.
- f. Disqualify any Bid of an Bidder who has breached any Applicable Laws or who has engaged in conduct prohibited by this Request for Tender, including where there is any evidence that the Bidder or any of its employees or agents colluded with any other Bidder, its employees or agents in the preparation of the Bid;

- g. Disqualify a Bid where the Bidder has or the principals of a Bidder have previously breached a contract with the Board, or has otherwise failed to perform such contract to the reasonable satisfaction of the Board the Bidder has been charged or convicted of an offence in respect of a contract with the Board, or the Bidder reveals a Conflict of Interest or Unfair Advantage in its Bid or a Conflict of Interest or evidence of any Unfair Advantage is brought to the attention of the Board;
- h. Make changes, including substantial changes, to this Request for Tender provided that those changes are issued by way of addenda in the manner set out in this Request for Tender;
- i. Accept or reject a Bid if only one Bid is submitted;
- j. Reject a subcontractor proposed by a Bidder;
- k. Select any Bidder other than the Bidder whose Bid reflects the lowest cost to the Board;
- l. Cancel this Request for Tender process at any stage and issue a new Request for Tender for the same or similar requirements, including where:
 - i. the Board determines it would be in the best interest of the Board not to award a Contract;
 - ii. the Bid prices exceed the Bid prices received by the Board for previously supplied similar Work;
 - iii. the Bid prices exceed the funds available for the Work; or
 - iv. the funding for Work has been revoked, modified, or has not been approved;and where the Board cancels this Tender, the Board may do so without providing reasons, and the Board may thereafter issue a new Request for Tender, Request for Qualifications, Sole Source or do nothing;
- m. Discuss with any Bidder different or additional terms to those contained in this Request for Tender or in any Bidder's Bid.

27.2. By submitting a Bid, the Bidder authorizes the collection by the Board of the information identified in this Request for Tender, which the Board may request from any third party.

28. RECORD AND REPUTATION

28.1. Without limiting or restricting any other right or privilege of the Board and regardless of whether or not a Tender or Bidder otherwise satisfies the requirements of an RFT, the Board may reject summarily a Tender from any person where:

- a. The commercial relationship between the Board and the Bidder has been impaired by the prior and/or current act(s), or omission(s) of such Bidder,
- b. The Bidder is or has been engaged, either directly or indirectly, in a legal action against the Board, its elected or appointed officials and/or employees in relation to:
 - i. any contract or service; or
 - ii. any matter arising from the Board's exercise of its powers, duties or functions.

28.2. In determining whether or not to reject

- a. In determining whether or not to reject a Tender under this section, the Board may consider whether the litigation is likely to affect the Bidder's ability to work with the Board, and/or whether the Board's experience with the Bidder indicates that the Board is likely to incur increased staff and legal costs in the administration of the Contract if it is awarded to the Bidder.
- b. For the purpose of 26.1, the prior acts or omissions of a Bidder shall also include the prior acts or omissions of; an officer, a director, a majority or controlling shareholder, or a member of the Bidder, if a corporation; a partner of the Bidder, if a partnership; any corporation to which the Bidder is an affiliate of or successor to, or an officer, a director or a majority or controlling shareholder of such corporation and any person with whom that the Bidder is not at arm's length within the meaning of the Income Tax Act (Canada).

29. CONFIDENTIALITY

29.1. Any information or documentation provided by a Bidder in connection with a Request for Tender is subject to the provisions of the Freedom of Information and Protection or Privacy Act. R.S.O., 1990, C.m.56. As a consequence, the Grand Erie District School Board cannot guarantee the confidentiality of the

documentation and information provided during the course of the Request for Tender.

29.2. Subject to the provisions of the Freedom of Information and Protection of Privacy Act, the Owner will make reasonable efforts to protect the confidentiality of information and documentation submitted by a supplier as part of the Bidder's Bid. All Bidders are encouraged to designate and identify to the Owner all information and/or documentation it regards as being confidential in nature. Please note: neither the entire Bid, nor the identity of the Bidder can be designated as confidential.

30. IDENTICAL BIDS

30.1. If more than one (1) substantially complaint Bid is received where the Stipulated Price Bids are identical, the Owner, in the presence of the identical Bidders will flip a coin to determine the award.

31. CONFIDENTIAL INFORMATION OF THE BOARD

31.1. All information provided by or obtained from the Board is any form in connection with this Request for Tender either before or after the issuance of this Request for Tender:

- a. is the sole property of the Board and must be treated as confidential;
- b. is not to be used for any purpose other than replying to this Request for Tender and the performance of the Contract;
- c. must not be disclosed without prior written authorization from the Board; and
- d. shall be returned by the Bidder to the Board immediately upon the request of the Board.

32. BID PROTEST PROCEDURE

32.1. In the event that a Bidder wishes to review the decision of the Board in respect of any material aspect of the Request for Tender Process, the Bidder shall submit a protest in writing to the Board within ten (10) days of the closing date of the Tender.

32.2. Any protest in writing shall include the following:

- a. a specific identification of the provision and/or procurement procedure that is alleged to have been breached;
- b. a specific description of each act alleged to have breached the procurement process;
- c. a precise statement of the relevant facts;
- d. an identification of the issues to be resolved;
- e. the Bidder's arguments and supporting documentation; and
- f. the Bidder's requested remedy.

33. ENTITLEMENT TO A DEBRIEFING

33.1. In accordance with the Broader Public Sector Procurement Directive Unsuccessful Bidders are entitled to a debriefing, during which they will be provided with feedback regarding their submission. In order to be debriefed, Unsuccessful Bidders must contact the Board Buyer or their designate to request a debriefing within sixty (60) days from the date of the notification of award.

34. ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT (AODA)

34.1. Pursuant to Section 6 of Ontario Regulation 429/07 ("Regulation"), Accessibility Standards for Customer Services made under the Accessibility for Ontarians with Disabilities Act, 2005, the Successful Bidder shall ensure that all of its employees, agents, volunteers, or others for whom it is at law responsible, receive training about the provisions of the good and services contemplated herein to persons with disabilities. Such training shall be provided in accordance with Section 6 of the Regulation and shall include, without limitation, a review of the purposes of the Act and the requirements of the Regulation, as well as instruction regarding all matters set up in Section 6 of the Regulation. Where requested by the Board, the Successful Bidder shall provide written proof that all employees have been trained as required under the Act as well as any documentation regarding training policies, practices and procedures.

END OF SECTION 00200 – INSTRUCTION TO BIDDERS

SECTION 00300 – INFORMATION AVAILABLE

1. GEOTECHNICAL ASSESSMENT

1.1. Detailed geotechnical assessment report included herein, titled as follows:

- a. Geotechnical Investigation Letter Report

2. ARBORIST REPORT

2.1. Detailed arborist report and tree preservation plan included herein, titled as follows:

- a. Arborist Report – Pre-construction Assessment

3. LIMITED DESIGNATED SUBSTANCE SURVEY

3.1. Detailed limited designated substance survey report is included herein, titled as follows:

- a. Limited Designated Substance Survey Report

3.2. The asbestos survey examined for both friable and non-friable asbestos building materials. The recommendations given shall be reviewed by the Contractor and considered a requirement of the Contract Documents. Refer to specifications and reports for removal requirements and procedures.

3.3. Neither the Owner nor the Consultant guarantees the accuracy or completeness of the asbestos survey. The Contractor shall satisfy themselves, with regard to all matters relating to asbestos materials, conditions and phasing of the Work, which may affect methods or costs of construction before commencing Work.

END OF SECTION 00300 – INFORMATION AVAILABLE

SECTION 00410 – STIPULATED PRICE BID FORM

Submit Stipulated Price Bid and price breakdowns where applicable, on this official form.

All blank items indicated must be filled out and delivered on or before the official Bid closing time as stated in the Instructions to Bidders.

From:

Legal Name of Bidder: _____

Business Address of Bidder: _____

Telephone Number: _____ Fax Number: _____

Email Address: _____

**To: Laura Mels,
Supervisor of Purchasing Services
Grand Erie District School Board
349 Erie Avenue, Brantford, Ont. N3T 5V3**

1. BASIS OF TENDER

1.1. DOCUMENTS

- a. We have examined all the official Contract Documents issued by the Owner, including specifications and drawings as applicable.

1.2. SITE CONDITIONS

- a. We have inspected and visited the site of proposed work and fully familiarized ourselves of the existing conditions and limitations of the Work.

1.3. UNDERSTANDING

- a. No oral, fax, electronic, telephone or telegraphic proposals will be considered.
- b. The requirements of these Official Request for Tender Documents govern all phases of the Work and the Tender proposal unit prices shall include all costs that arise from compliance with such documents. It must be clearly understood that the Board will not accept any price variation in the supply or installation of products or labour or materials from those submitted and carried by the Bidder hereunder. During the Contract period, the Board will not be responsible for, or entertain any price increase in the cost of materials or labour carried in the Bid amount for any reason, including acts of war or world events.
- c. Bidders are responsible for acquainting all Subcontractors or suppliers with the requirements of the Tender Documents.
- d. No allowance will be made after Bid closing or award of Contract for errors or omissions due to Subcontractors or suppliers not being familiar with such requirements.

- e. The award of this Contract is subject to budget allotment and availability and approval by the Board of Trustees.

2. COST PROPOSAL

2.1. BASE BID SUM

- a. We, the undersigned, hereby offer to furnish all materials, installation, labour and equipment necessary to complete the entire Work (Project) in strict accordance with all requirements of the official Contract Documents.

Base Bid Amount	\$ _____
Cash Allowance	\$120,000.00
Stipulated Price Bid for 2024-66-T	\$ _____

2.2. Harmonized Sales Tax (HST)

- a. The Stipulated Price Bid and price breakdown where applicable submitted for this Contract shall exclude the HST.
- b. For purposes of calculating costs of extra work performed, any HST paid by the Contractor to suppliers or Subcontractors shall be deducted prior to any mark-up, profit or overhead by the Contractor.
- c. The Contractor will not be permitted to add any mark-up for overhead or profit to the HST amount or to claim for any time involved in processing or collecting the HST and for its remittance to the Canada Revenue Agency.

2.3. We confirm that the Stipulated Price Bid indicated in COST PROPOSAL – BASE BID SUM 2.1.a, includes the cost of all labour, materials, equipment, freight, mileage, fuel surcharges, all other applicable taxes (if any), royalties, custom duties, overhead and profit, insurance premiums, and all other charges at the date of this Tender, and not subject to revisions due to changes in cost of labour, materials or other items. No allowance shall be made subsequently in this connection on behalf of the Contractor for any error or negligence on their part.

3. ADDENDA

3.1. We acknowledge the receipt of the following addenda issued during the Request for Tender period.

ADDENDUM NO. _____ TO ADDENDUM NO. _____

4. NO COLLUSION

4.1. We declare that this Tender is made without collusion, knowledge, comparison of figures or arrangement with any other company, firm or person submitting a Tender for the same Work and is in all respect fair and without collusion or fraud.

5. CONFLICT OF INTEREST

5.1. We declare that to our knowledge no member of the Board of Trustees, and no officer or employee of the Board is, will be, or has become interested, directly or indirectly, as a contracting party, partner, or in the supplies; work or business in connection with the said Contract, or in any portion thereof, or of any supplies to be used therein, or in any monies derived therefrom.

6. INTERPRETATION

6.1. We further acknowledge and agree that all statements, schedules and other information provided in the Tender are true, complete and accurate in all respects. We have read, understand and agree to abide by all terms and conditions contained in this document and confirm that the party executing this Form of Tender is authorized to sign the same.

7. COMPLETION OF THE WORK

7.1. It is the intention of the Owner to award the Contract within ten (10) days and Work is commence upon the approval and be substantially performed no later than **May 30, 2025**.

7.2. Dated at _____ this _____ day of _____, 2024.

7.3. The undersigned Bidder, understands the circumstances and requirements applicable to this Contract as specified in these official Request for Tender documents and will complete the entire Work (Project) on or before the completion deadline date as specified above.

Legal Name of Bidder

Telephone Number

Fax Number

Authorized Signature of Bidder with the Authority to Bind the Corporation

Print Name and Title of Authorized Signature

8. STATEMENT A – PROJECT EXPERIENCE

Bidders shall include at least three (3) current references (other than the Board or its Consultants) for Work of a similar nature (i.e. – size and scope) to this Tender. The Board may verify references and may choose to visit previous project sites. A negative or poor reference or job completion may, at the Board’s sole discretion, be sufficient reasons for not awarding this Contract to a Bidder.

**SUMMARY OF BIDDER’S EXPERIENCE IN SUCCESSFULLY COMPLETED
 SIMILAR WORK**

Year	Description of Project Scope/Cost	Company Name & Address	Contact Person & Email	Phone #

9. STATEMENT B – QUALIFICATIONS OF SENIOR SUPERVISORY STAFF

Qualifications of senior supervisory staff to be employed on this Contract.

Name	Appointment	Qualifications and Experience

10. STATEMENT C – LIST OF SUBCONTRACTORS

The Bidder shall make an entry against each possible sub trade listed either by naming the proposed Subcontractor or by entering “by own forces”, whichever applies. No blank spaces are to be left.

If, in addition, the Bidder proposes to sublet a part of the Work which is not listed below, he shall add the sub trade and the proposed Subcontractor’s name to the list.

Division of Section of Work	Name of Subcontractor or Supplier	Product
Excavation and Backfill		
Concrete		
Masonry		
Structural Steel		
Roofing and Sheet Metal		
Exterior Metal Cladding		
Aluminum Composite Panels		
Metal Doors and Frames		
Aluminum Windows		
Millwork		
Ceramic and Porcelain Tile		
Resilient Flooring		
Acoustic Ceilings		
Painting		

Division of Section of Work	Name of Subcontractor or Supplier	Product
Toilet Partitions		
Asphalt Paving		
Landscaping		
Site Services		
Mechanical		
Electrical		

END OF SECTION 00410 – STIPULATED PRICE BID FORM

SECTION 00800 – SUPPLEMENTARY ARTICLES AND CONDITIONS

1. AGREEMENT BETWEEN OWNER AND CONTRACTOR

1.1. ARTICLE A-1 – THE WORK

- a. Add the following words at the end of paragraph 1.3. “and attain *Completion* of the *Work* as soon as reasonably possible thereafter and in any event by the date which is 30 days following *Substantial Performance* of the *Work*.”
- b. Masonry Contractors must be selected from the GEDSB Approved vendor list:
 - Atwill-Morin Group Inc.
Name: Matthew Atwill-Morin, President
Address: 3730 Cremazie East Blvd. 2nd Floor, Montreal QC H2A 1B4
Phone Number: 514-931-7228
E-mail information: estimation@atwill-morin.com
 - Bartlett Restoration
Name: Benjamin Bartlett, President
Address: 7950 Middle Line, Charing Cross ON N0P 1G0
Phone Number: 647-473-1925
E-mail information: ben.bartlett@bartlettrestoration.com
 - RD Masonry (1219685 Ontario Limited)
Name: Rod Daviault, Owner
Address: 178 Nichol St., Waterford, ON N0E 1Y0
Phone Number: 519-861-0429
E-mail information: rdmasonry2012@hotmail.com
- c. PA and Communications contractor must be GEDSB Approved Contractor:
 - KR Communications.
Name: Timothy Ward
Phone Number: 905-637-4411
Address: 2008 Parklane Cres., Burlington ON L7M 3V5
E-mail information: office@gardinerenvironmental.ca
- d. Asbestos Abatement contractor must be GEDSB Approved Contractor:
 - GT Gardiner Enterprises Inc.
Name: Brittany de Vries, Manager
Phone Number: 905-637-4411
Address: 2008 Parklane Cres, Burlington ON L7M 3V5
E-mail information: office@gardinerenvironmental.ca
 - McGowan Insulations Ltd
Name: Robert McGowan, VP
Phone 905-549-1844
Address: 345 Barton St. Stoney Creek, ON L8E 2L2
E-mail information: info@mcgowan.on.ca

- Salandria LTD.
Name: Tomas Korda, President
Phone Number: 905-707-6568
Address: 6-100 West Beaver Creek Road, Richmond Hill ON L4B 1H4
E-mail information: tkorda@salandria.ca

- Schouten Environmental Inc.
Name: Brant Nicholson, General Manager
Phone Number: 519-577-8989
Address: 7908 Jariott St, Waterford ON N0M 2S0
E-mail information: brant@schouten.ca / info@schouten.ca

- TriPhase Group Inc
Name: Rachelle Atrache, COO
Phone Number: 905-823-7965
Address: 446 Hazlehurst Road, Mississauga ON L5J 2Z7
E-mail information: estimating@triphasegroup.com

1.2. ARTICLE A-3 – CONTRACT DOCUMENTS

- a. Add the following to the list of *Contract Documents* in paragraph 3.1:
 - CCDC 2-2020 Supplementary Articles and Conditions
 - General Specifications
 - Technical Specifications
 - Drawings
 - Tender Addenda
 - Tender
 - Performance Bond
 - Labour and Material Payment Bond

1.3. ARTICLE A-5 – PAYMENT

- a. Amend the preamble of paragraph 5.1, so that it reads as follows:

Subject to the provisions of the *Contract Documents*, and in accordance with legislation and statutory regulations respecting holdback percentages and where such legislation or regulations do not exist or apply subject to a holdback of ten percent (10%), and subject to a separate and additional two percent (2%) *Warranty/Deficiency Holdback* to the *Owner*, the owner shall...”

- b. Amend paragraph 5.1.3 so that it reads as follows:

“upon receipt of the *Consultant’s* final certificate of payment, pay to the *Contractor* the unpaid balance of the *Contract Price* Less the two percent (2%) *Warranty/Deficiency Holdback* accumulated from pervious progress draws on the *Contract*.”

- c. Delete paragraph 5.2.1 in its entirety and replace it with the following:

“Should either party fail to make payments as they become due under the terms of the *Contract*, or in an award by arbitration or court, interest shall also become due payable on such unpaid amount at zero percent (0%) above the prime rate. Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by the Bank of Canada for prime business loans, as it may change from time to time.”

1.4. ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

- a. ADD new paragraph 6.6 as follows:

“6.6 In addition to the addresses, requirements and timelines set out in Article 6, the following applies:

- .1 for the purposes of prompt payment provisions of the *Construction Act*, if applicable, and Part 5 – PAYMENT,
- (i) applications for payment and proper invoices will be considered given or delivered by the *Contractor* to the *Owner* when they have been delivered by the *Contractor*; and
 - (ii) notices of non-payment will be considered to have been given or delivered by the *Owner* to the *Contractor* when they have been delivered to the *Contractor*, and
- .2 for the purposes of the adjudication provisions of the *Construction Act*, if applicable, and other dispute notices, communications or delivery of documents to be given under the applicable *Construction Act* may be given by electronic mail, to the email address for the Owner and Contractor set out on page 4 of the CCDC 2 – 2020 Agreement to which these Supplementary Conditions are attached.

1.5. ARTICLE A-9 – CONFLICT OF INTEREST

- a. Add new Article A-9 – Conflict of Interest and add the following paragraphs as follows:

9.1 The *Contractor*, all the *Subcontractors* and *Suppliers*, and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not be engaged in any activity or provide any services where such activity or the provision of such services creates a Conflict of Interest (actually or potentially, in the sole opinion of the *Owner*) with the provision of the *Work* pursuant to the *Contract*. The *Contractor* acknowledges and agrees that a Conflict of Interest, as described in this Article A-9, includes, but is not limited to, the use of Confidential Information where the *Owner* has not specifically authorized such use.

9.2 The *Contractor* covenants and agrees that it will not hire or retain the services of any employee or previous employee of the *Owner* to complete the *Work* where to do so constitutes a breach by such employee or previously employee of the *Owner's* conflict of interest policy (in the sole opinion of the *Owner*) as it may be amended from time to time, until after the completion of the *Work* under the *Contract*.

9.3 It is the essence of the *Contract* that the *Owner* shall not have direct or indirect liability to any *Subcontractor* or *Supplier* and that the *Owner* relies on the maintenance of an arm's-length relationship between the *Contractor* and its *Subcontractors* and *Suppliers*. Consistent with the fundamental term of the *Contract* the *Contractor* will not enter into any agreement or understanding with any *Subcontractor* or *Supplier*, whether as part of any contract or any written or oral collateral agreement, pursuant to which the parties thereto agree to cooperate in the presentation of a claim for payment against the *Owner*, directly or through the *Contractor*, where such claim is, in whole or in part, in respect of a disputed claim by the *Subcontractor* or *Supplier* against the *Contractor*, where the payment to the *Subcontractor* or *Supplier* by the *Contractor* is agreed to be condition or contingent on the ability to recover those amounts or portion thereof from the *Owner*, failing which the *Contractor* shall be saved harmless from all or a portion of the claims. The *Contractor* acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a Conflict of Interest. For greater certainty, the *Contractor* shall only be entitled to advance claims against the *Owner* for amounts pertaining to the *Subcontractor* or *Supplier* claims where the *Contractor* has actually paid or unconditionally acknowledged liability for those claims or where those claims are the subject or litigation or binding arbitration between the *Subcontractor* or *Supplier* and the *Contractor* has been found liable for those claims.

9.4 Notwithstanding paragraph 7.1.2 or GC 7.1 – OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, SUSPEND THE WORK OR TERMINATE THE CONTRACT, a breach of this Article by the *Contractor*, any of the *Subcontractors*, or any of their respective advisors, partners, directors, officers, employees, agents and volunteers shall entitle the *Owner* to terminate the *Contract*, in addition to any other rights and remedies that the *Owner* has in the *Contract*, in law, or in equity.

1.6. DEFINITIONS

Definitions of the *Stipulated Price Contract* of the Standard Construction Document, CCDC 2-2008, *Stipulated Price Contract* for the above named Project are amended as follows:

- a. Amend definitions as follows:

- **Contract Documents** – Add the words “in writing” in the last line after the words “agreed upon”.
 - **Contractor** – Add the following sentence to the definition of *Contractor*. “The *Contractor* is the CONSTRUCTOR for the purpose of the OHSA.”
 - **Notice in Writing** – Add the following sentence to the definition of *Notice in Writing*: The *Consultant* will distribute a *Notice in Writing* to any and all sub-*Consultants* as deemed necessary.”
- b. Add new definitions as follows, which shall apply to terms used in the *Contract Documents* whether or not such terms are capitalized therein:
- **Asbestos** – Asbestos is a generic term describing a number of naturally occurring fibrous, hydrated mineral silicates that differ in chemical composition and are suitable for use as non-combustible, nonconducting and chemically resistant materials. Different types of asbestos which may be found in buildings are chrysotile, crocidolite, amosite, tremolite, actinolite or anthophyllite
 - **Completion** – *Completion* means when all of the following have occurred:
 - (a) *Substantial Performance* of the *Work* has been achieved; and
 - (b) the *Consultant* has certified that:
 - (i) the *Contract* is deemed to have been fully completed within the meaning of the *Construction Act*; or
 - (ii) if any such legislation is not in force or does not contain such definition, the price of completion, correction of a known defect or last supply is not more than the lesser of 1 per cent of the *Contract Price* and \$5,000.”
 - **Construction Act** – *Construction Act* means the *Construction Act*, R.S.O. 1990, c.C.30 and Regulations enacted thereunder, all as amended from time to time and subject to the application of the transition provisions in s. 87.3 of the *Construction Act*. *Payment Legislation* shall be deemed a reference to the *Construction Act*.
 - **Construction Schedule** – *Construction Schedule* means the schedule of *Work* to be performed by the *Contractor*, in accordance with the *Owner's* requirements, and as revised and/or updated pursuant to the *Owner's* written approval.
 - **Excusable Delay** – *Excusable Delay* means any bona fide delay or state of affairs reasonably beyond the control of a party (other than as a result of

financial incapacity of such party) which shall cause any party to be unable to fulfil or to be delayed or restricted in the fulfilment of such party's obligations arising as a result of:

- (i) *Labour Disputes*, fire, unusual delay by common carriers or unavoidable casualties;
- (ii) enemy or hostile actions, sabotage, war, blockades, insurrections, riots, washouts, nuclear and radiation activity or fall-out, civil disturbances, explosions, fire or other casualty, and acts of God (provided specifically that adverse weather conditions shall not be considered acts of God, even if such conditions are unusually adverse);
- (iii) any injunction ordered by a court of competent jurisdiction other than if such occurrence is caused by the *Owner* or the *Contractor* failing to adhere to this *Contract*;
- (iv) disease, epidemics, pandemics (including COVID-19), power shortages or outages; or
- (v) inability to obtain any required material, goods, equipment, service or labour, as a direct result of the circumstances described in (i)-(iv) above, unless they are/were readily available, or reasonable substitutes were readily available (including at a greater cost), or could have been previously acquired by the party had it completed reasonable efforts to anticipate the requirements of the *Work* or foreseeable labour or supply related circumstances.

Notwithstanding the forgoing, the following potential causes for delay are not considered to be an *Excusable Delay*:

- .1 failure of a *Supplier* to deliver *Products* in accordance with the *Construction Schedule*, if such *Products* were readily available, or reasonable substitutes were readily available (including at a greater cost), or could have been previously acquired by the party had it completed reasonable efforts to anticipate the requirements of the *Work* or foreseeable labour or supply related circumstances;
- .2 weather and climate related delays;
- .3 delays caused by economic conditions, including supply chain shortages or delays, or labour shortages, or price increases;
- .4 delays caused by the failure of the *Contractor* to take customary precautions and protections of the *Work* and the *Construction Schedule* in accordance with *Contract*; and
- .5 public orders, guidelines, directives and laws in existence prior to the date the Agreement was signed, including in relation to the COVID-19 pandemic.

- **Install** – *Install* or *Installation* means completion of the following activities, including the associated labour, services, plant, construction machinery and equipment required to:
 - i. Position and adjust *Products* to final placement;
 - ii. Affix and anchor *Products* in final placement, in accordance with manufacturers' instructions and *Contract Documents*;
 - iii. Commission and adjust *Products* for proper operation.

- **Labour Dispute** – *Labour Dispute* means any lawful or unlawful work stoppage, labour disruption, strike, job action, lock-outs, picketing, or other labour controversy which does affect the *Work*, but does not include market difficulties or slow-downs in retaining workers/employees (whether due to wage demands or otherwise) or a general refusal to work or supply materials.

- **Make Good** – *Make Good* means to restore to at least the quality of, and leave in no worse condition than, the original.

- **OHSA** – The *OHSA* is the Occupational Health and Safety Act (Ontario), and all other applicable health and safety acts or regulations.

- **Overhead** – *Overhead* means all site and head office operations and facilities, all site and head office administration and supervision, including project manager costs; all duties and taxes for permits and licenses required by the authorities having jurisdiction at the Place of the *Work*; all requirements of Division 1 of the Specifications, including but not limited to submittals, warranty, quality control, insurance and bonding; calculations, testing and inspections; meals and accommodations; and, tools, expendables and clean-up costs.”

- **Proposed Change** – *Proposed Change* or Contemplated Change Order is a written instruction by the *Consultant* directing the *Contractor* to provide the following:
 - i. Amount of an adjustment in the *Contract Price* or Cash Allowance; and/or
 - ii. The extent of the adjustment in the *Contract Time* if any.

- **Submittals** – *Submittals* are documents or items required by the *Contract Documents* to be provided by the *Contractor*, such as:
 - i. Shop Drawings, samples, models, mock-ups to indicate details or characteristics, before the portion of the *Work* that they represent can be incorporated into the *Work*; and

- ii. Record drawings and manuals to provide instructions for the operation and maintenance of the *Work*.
- **Warranty/Deficiency Holdback** – *Warranty/Deficiency Holdback* means a holdback and reserve of two per cent (2%) of the *Contract Price* to be held by the *Owner*, and applied or released in accordance with paragraph 12.3.7.

1.7. GC 1.1 CONTRACT DOCUMENTS

- a. Add 1.1.9.1 as follows:

1.1.9.1 “The *Contractor* is the sole coordinator of the *Work* and neither the organization of the *Specifications* into the divisions, sections and parts, nor the arrangement of the drawings shall oblige the *Consultant* or the *Owner* to act as arbiter to establish limits or responsibility between the *Contractor* and its *Subcontractors*.”

- b. Delete paragraph 1.1.5.1 in its entirety and replace it with the following

.1 “the order of priority of documents, from highest to lowest, shall be:

- Supplementary Conditions,
- the Agreement between the *Owner* and the *Contractor*,
- the Definitions,
- the General Conditions,
- Division 01 of the Specifications,
- technical Specifications,
- material and finishing schedules,
- the Drawings.”

- c. Add the following to the end of 1.1.9:

“The Specifications are divided into divisions and sections for convenience but shall be read as a whole and neither such division nor anything else contained in the *Contract Documents* will be construed to place responsibility on the *Owner* or the *Consultant* to settle disputes among the *Subcontractors* and *Suppliers* with respect to such divisions. The Drawings are, in part, diagrammatic and are intended to convey the scope of the *Work* and indicate general and appropriate locations, arrangements and sizes of fixtures, equipment and outlets. The *Contractor* shall obtain more accurate information about the locations, arrangements and sizes from study and coordination of the Drawings, including Shop Drawings and shall become familiar with conditions and spaces affecting those matters before proceedings with the *Work*. Where site conditions require reasonable minor changes in indicated locations and arrangements, the *Contractor* shall make such changes at no additional cost to the *Owner*. Similarly, where known conditions or existing conditions interfere

with new installation and require relocation, the *Contractor* shall include such relocation in the *Work*. The *Contractor* shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible. The schedules are those portions of the Contact Documents, wherever located and whenever issued, which compile information of similar content and may consist of drawings, tables and/or lists.”

- d. Add new paragraph 1.1.12 as follows:

1.1.12 Syntax

- i. Where the words ‘accepted’, ‘reviewed’, ‘designated’, ‘directed’, ‘inspected’, ‘instructed’, ‘permitted’, ‘required’, and ‘selected’ are used in the *Contract Documents*, they are deemed to be followed by the words ‘by the *Consultant*’, unless the context provides otherwise.
- ii. Where the words ‘acceptable’, ‘submit’ and ‘satisfactory’ are used in the *Contract Documents*, they are deemed to be followed by the words ‘to the *Consultant*’, unless the context provides otherwise.

- e. Add new paragraph 1.1.13 as follows:

“1.1.13 The *Consultant*, on behalf of the *Owner*, shall provide the *Contractor* without charge, an electronic PDF/CAD drawings and version of the *Contract Documents*, exclusive of those required by jurisdictional authorities and the *Contractor* is responsible to print as many copies as it requires at no cost to the *Owner*. The *Consultant* shall issue Issued for Construction set of *Contract Documents* in an electronic format to the *Contractor*. Additional copies can be purchased by the *Contractor* at the *Consultant*’s cost of reproduction, handling and sales tax. The *Contract Documents* shall be signed in triplicate (3) by the *Owner* and the *Contractor*, and each of the *Contractor*, the *Owner* and the *Consultant* shall retain one set of signed and sealed (if required by the governing law of the *Contract*) *Contract Documents*.”

- f. Add new paragraph 1.1.14 as follows:

“1.1.14 If, at any time, the *Contractor* finds errors, inconsistencies, or omissions in the *Contract Documents* or has any doubt as to the meaning or intent of any part thereof, including laying out of the *Work*, the *Contractor* shall immediately notify the *Consultant*, and request instructions, a Supplemental Instruction, Change Order, or Change Directive, as the case may require, and the *Contractor* shall not proceed with the work affected until the *Contractor* has received such instructions, a Supplemental Instruction, Change Order or Change Directive. Neither the *Owner* nor the *Consultant* will be responsible for the consequences of any action of the *Contractor* based on oral instructions. Errors, inconsistencies and/or omissions in the Drawings and/or Specifications which do not allow completion of the *Work* of the *Contract* shall be brought to the *Consultant*’s

attention prior to the execution of the *Contract* by means of a request for information. Notwithstanding the foregoing, errors, inconsistencies, discrepancies and/or omissions shall not include lack of reference on the Drawings or in the Specifications to labour and/or Products that are required or normally recognized within respective trade practices as being necessary for the complete execution of the *Work*. The Contactor shall not use subsequent requests for information, issued during execution of the *Work* to establish a change and/or changes in the *Work* pursuant to Part 6 – CHANGES IN THE WORK”

1.8. ADD NEW ARTICLE “GC 1.5 PROJECT REQUIREMENTS” AS FOLLOWS:

“1.5.1: The *Contractor* represents covenants and warrants to the *Owner* that:

- a. It has the necessary high degree of expertise and experience d to enable it to perform the services required by the *Contract Documents*;
- b. The personnel it assigns to the *Project* are highly experienced;
- c. It has a sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the *Owner’s* approval, in the event of death, incapacity or resignation;
- d. There are no pending, threatened or anticipated claims that would have a material effect on the financial ability of the *Contractor* to perform its *Work* under the *Contract*;
- e. If the *Contractor* is not maintaining the *Contract Schedule*, consistent with its obligations under the *Contract*, then at the request of the *Owner*, or the *Consultant*, it shall increase its efforts to the *Project* including the addition of more personnel to the *Project* during regular times and during periods of time for which overtime may be required, all of which is to be done promptly at the *Contractor’s* own cost and expense; and
- f. In tendering for the *Work* and in entering into this *Contract*, other than any survey or geotechnical report furnished by the *Owner*, the *Contractor* did not and does not rely upon information furnished by the *Owner* or any of its agents or servants respecting the nature or confirmation of the ground at the site of the *Work*, or the location, character, quality or quantity of the materials to be removed or to be employed in the construction of *Work*, or the character of the construction machinery and equipment or facilities needed to perform the *Work*, or the general and local performance of the work under the *Contract* and expressly waives and releases the *Owner* from all claims with respect to the said information with respect to the *Work*.”

1.9. GC2.2 ROLE OF THE CONSULTANT

- a. Add 2.2.7.1 as follows:

2.2.7.1 “Questions shall be submitted by the *Contractor* in the form of a “Request for Information” in relation to a “Proposed Change” or “change directive” or “Contemplated change order”.”

- b. Amend paragraph 2.2.12 by the addition of the following to the end of that paragraph:

“If, in the opinion of the *Contractor*, the *Supplemental Instruction* involves an adjustment in the *Contract Price* or in the *Contract Time*, it shall, within ten (10) *Working Days* of receipt of a *Supplemental Instruction*, provide the *Consultant* with a notice in writing to that effect. Failure to provide written notification within the time stipulated in this paragraph 2.2.12 shall be deemed an acceptance of the *Supplemental Instruction* by the *Contractor*, without any adjustment in the *Contract Price* or *Contract Time*.

- c. Add at the end of paragraph 2.2.15 the words “as well as a review to determine the date of *Completion* of the *Work* as provided herein.”
- d. In paragraph 2.2.18 delete from line two (2) “against whom the *Contractor* makes no reasonable objection and”.
- e. Add new paragraph 2.2.19 as follows”

2.2.19 “The *Consultant* or the *Owner*, acting reasonably, may from time to time require the *Contractor* to remove from the project any personnel of the *Contractor*, including project managers, superintendents or *Subcontractors*, such persons shall be replaced by the *Contractor* in a timely fashion to the satisfaction of the *Consultant* or the *Owner*, as the case may be, at no cost to the *Owner*.”

1.10. GC 2.3 Review and Inspection of the Work

- a. ADD new paragraph 2.3.8 as follows:

2.3.8 “The *Contractor* shall arrange for inspections by all applicable authorities, if and when required, and shall give the *Consultant* and the *Owner* timely notice of the date and time.”

1.11. **GC 2.4 DEFECTIVE WORK**

- a. To paragraph 2.4.1 add 2.4.1.1 and 2.4.1.2 as follows:

2.4.1.1 “The *Contractor* shall rectify in an acceptable manner all other defective *Work* and like deficiencies throughout the *Work* whether or not they are specifically identified by the *Consultant*”.

2.4.1.2 “The *Contractor* shall prioritize the correction of any defective work, which, in the sole discretion of the *Owner*, adversely affects the day to day operations of

the *Owner* or which, in the sole discretion of the *Consultant*, adversely affects the progress of the *Work*".

- b. Delete 2.4.2 in its entirety and substitute new paragraph 2.4.2:
2.4.2 "The *Contractor* shall promptly pay the *Owner* for costs incurred by the *Owner*, the *Owner's* own forces or the *Owner's Other Contractors*, for work destroyed or damaged or any alterations necessitated by the *Contractor's* removal, replacement or re-execution of defective work. The *Owner* may appoint the *Contractor* to rectify any such deficiencies to other contractor's work, at the *Contractor's* expense.
- c. Delete 2.4.3 in its entirety and substitute new paragraph 2.4.3:
2.4.3 "If in the opinion of the *Consultant* it is not expedient to correct defective *Work* or *Work* not performed as provided in the *Contract Documents*, the *Owner* may deduct from the amount otherwise due to the *Contractor* the lesser of (i) the difference in value between the *Work* as performed and that called for by the *Contract Documents* and (ii) the cost to rectify the defective or substandard *Work*. If the *Owner* and the *Contractor* do not agree on the difference in value or the cost to rectify the *Work*, they shall refer the matter to the *Consultant* for determination."

1.12.GC 3.1 CONTROL OF THE WORK

- a. Add new paragraphs 3.1.3, 3.1.4 and 3.1.5 as follows:

3.1.3 "Prior to commencing procurement, fabrication and construction activities, the *Contractor* shall verify, at the *Place of Work*, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceeding with any part of the *Work* affected thereby.

3.1.4 "The *Contractor* shall perform the *Work* in accordance with the *Contract Documents* and all laws, code and industry standards, and shall employ only good workmanship subject to specific requirements of the *Contract Documents*, and in accordance with applicable laws, ordinances, rules, regulations, or codes relating to the performance of the *Work*. In performing its services and obligations under the *Contract*, the *Contractor* shall exercise the standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that throughout the *Contract*, the performance of the *Contractor's* obligations, duties and responsibilities shall be judged against this standard. The *Contractor* shall exercise the same standard of care, skill and diligence in respect of any Products, personnel or procedures which it may recommend to the *Owner*.

3.1.5 “Without limiting the generality of the foregoing, the *Contractor* is responsible for the intermeshing of the various parts of the *Work* so that no part shall be left in an unfinished or incomplete condition owing to any disagreement between the various *Subcontractors* and *Suppliers*, or between any of the *Subcontractors* and *Suppliers* and the *Contractor* as to where the *Work* of one begins or ends with relation to the *Work* of the other.”

1.13.GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

- a. Add new paragraphs 3.2.7, 3.2.8 and 3.2.9 as follows:

3.2.7 “Placing, installing, application and connection of the *Work* by the *Owner’s* own forces or by other contractors, on and to the *Contractor’s Work*, will not relieve the *Contractor’s* responsibility to provide and maintain the specified warranties.”

3.2.8 “Entry by the *Owner’s* own forces and by other contractors does not indicate acceptance of the *Work* and does not relieve the *Contractor* of any responsibility under the *Contract* including the responsibility to complete the *Work*.”

3.2.9 “The *Contractor* shall act as “prime contractor” under the *OHSA* for all *Other Contractors*. The *Owner* shall ensure that its own forces and *Other Contractors* comply with all health and safety precautions and programs established by the *Contractor* as constructor at the *Place of the Work*.”

1.14.GC 3.4 CONSTRUCTION SCHEDULE

- a. In paragraph 3.4.1.1 add the following “the commencement of the *Work* and prior to” before “the first application for payment”.
- b. In paragraph 3.4.1.2 delete “monthly” and substitute “every two (2) weeks”.
- c. Add a new paragraph 3.4.1.4 as follows:

3.4.1.4 “subject to the provisions of GC 6.5 DELAYS, provide overtime work without change to the *Contract Price* if such work is deemed necessary to meet the schedule, and all extensions to the *Contract Time* must be made in accordance with the *Contract Documents*.”

1.15.GC 3.6 SUBCONTRACTORS AND SUPPLIERS

- a. Add at the end of paragraph 3.6.1.1 “including any warranties and service agreements which extend beyond the term of the *Contract*, and”.

- b. In subparagraph 3.6.1.2 after the words “the *Contract Documents*” insert the words “including any required surety bonding”.

- c. Add new paragraph 3.6.7, 3.6.8, 3.6.9 and 3.6.10 as follows:

3.6.7 “The *Contractor* agrees not to change *Subcontractors* without the *Owner’s* and/or *Consultants* prior written authorization.”

3.6.8 “The *Contractor* confirms that any *Subcontractor* it employs to carry out any part of the *Work* covered by the collective agreement between the Brick Layers and Allied Craft Union of Canada (“BACU”) and the Masonry Industry Employer Council of Ontario/Ontario Masonry *Contractor’s* Association/BACU Bargaining Committee in the Industrial, Commercial and Institutional (ICI) sector (the “BACU Collective Agreement”) is a party to and is bound by the BACU Collective Agreement (the “BACU *Subcontractor* Covenant”).

3.6.9 “The *Contractor* shall, in the case of its *Subcontractors*, be held responsible for and shall ensure that they obtain all necessary permits, fees, licenses, certification of inspections and all insurance in connection with the *Work* as may be required by the laws, ordinances, rules, regulations and codes relating to the *Work* and as may be required by this *Contract*.”

3.6.10 “Subcontracting by the *Contractor*, including where specifically approved by the *Owner*, shall not be construed as relieving the *Contractor* from any obligations under the *Contract* or imposing any liability upon the *Owner*.”

1.16.GC 3.7 LABOUR AND PRODUCTS

- a. Amend paragraph 3.7.3 by adding the words “...agents, subcontractors and suppliers” after the word “employees” in the first (1st) line.

- b. Add new paragraph 3.7.1.1 as follows:

3.7.3.1 “The *Contractor* confirms that it is bound by the BACU Collective Agreement and shall indemnify and save the *Owner* harmless with respect to claims that arise out of, or are attributable in any respect to, the *Contractor’s* failure to comply with any of its obligations pursuant to the BACU Collective Agreement (the “BACU Compliance Covenant”)

- c. Add new paragraphs 3.7.4, 3.7.5, 3.7.6, 3.7.7 and 3.7.8 as follows:

3.7.4 “The *Contractor* shall use and Install all manufactured materials, equipment, appliances and *Products* strictly in accordance with the manufacturer’s specifications unless otherwise indicated in the *Contract Documents*.”

3.7.5 “The *Contractor* shall not substitute any materials, equipment or products for those specified or use any method other than the specified without first obtaining the prior consent in writing of the *Consultant*.”

Each application for consent to use a substituted material, equipment, product or method shall be made in writing to the *Owner*, and shall:

- .1 Identify the material, equipment, product or method to be substituted;
- .2 Identify the substitute;
- .3 Provide the name of the manufacturer of the substitute and his address;
- .4 Provide the name of the supplier or the substitute and his address;
- .5 Provide a reason for proposing the substitute;
- .6 Provide details and description of alternatives.

The *Contractor* shall assume responsibility to determine that the substituted material, equipment or product meets the space requirements shown in the drawings and described in the specifications. The *Contractor* shall also be responsible for any additional costs incurred in the connection with the Install of any such substituted material, equipment or product.”

3.7.6 “The *Contractor* shall cooperate with the *Owner* and its representatives and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the *Work* at the Place of *Work*, including cooperation to attempt to avoid work stoppages, trade union jurisdictional disputes and other labour disputes. Any costs arising from labour disputes shall be at the sole expense of the *Contractor*.”

3.7.7 “All *Products* and materials paid for by the *Owner* as part of the *Contract Price* are deemed to be the property of the *Owner*; however, the *Owner* shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The *Contractor* is responsible for the safe on-site storage of *Products* and for their protection (including *Products* which may be supplied by the *Owner*). Such storage shall be managed so as to avoid dangerous conditions or contamination to the *Products* or endanger persons or property. The *Contractor* shall ensure that the price agreed to with a *Subcontractor* or *Supplier* includes the cost of delivery and storage of all *Products*.” The *Contractor* shall remove all surplus or rejected materials as its property when notified in writing to do so by the *Consultant*. Notwithstanding that ownership of the *Work* and *Products* may vest in the *Owner*, the risk of all *Work* and *Products* shall remain with the *Contractor* until the *Work* and *Products* are accepted and assumed by the *Owner* as otherwise set out in the *Contract*.

3.7.8 “Notwithstanding any other term of this *Contract*, fluctuations in the price and cost of *Products*, materials and labour for the *Work* shall be at the risk of the *Contractor*, and shall not form the basis for any change in the *Contract Price*.”

1.17.GC 3.8 SHOP DRAWINGS

- a. Delete 3.8.7 and substitute as follows:

3.8.7 “The *Consultant* is permitted ten (10) Workings Days to review shop drawings from date of receipt, to the date of issuance, for return by post, courier, etc.

Should the *Consultant* review and require the resubmission of shop drawings, then (10) Working Days is again permitted for review.

Should the *Contractor* submit a large number of show drawings the *Consultant* will notify the *Contractor* within three (3) days of receipt, an estimated time for processing.”

- b. And new paragraphs 3.8.9 and 3.8.10 as follows:

3.8.9 “The review of shop drawings by the *Consultant* does not authorize a change in quantity, *Contract Price* or *Contract Time*.”

3.8.10 “The *Contractor* shall maintain a copy of all *Construction Documents* on site and red line all changes or modifications, with revised dimensions, that will serve as the basis for the preparation of as-built drawings, including for all construction trades.”

1.18.ADDITIONAL GENERAL CONDITIONS 3.9 AND 3.10

- a. Add new General Conditions 3.9 and 3.10 as follows

GC 3.9 RIGHT OF ENTRY

3.9.1 The *Owner* shall have the right to enter upon and occupy the *Work*, in whole or in part for the purpose of placing fittings and equipment or for such other uses as it may wish. Both the *Owner* and the *Contractor* shall cooperate with the other, so as to permit the *Contractor* to complete the *Work* and the *Owner* to place fittings and equipment in the most efficient manner possible. Such entry and occupancy shall not be interpreted as acceptance of the *Work*, nor in any way relieve the *Contractor* from its responsibilities under the *Contract*.

GC 3.10 CONSTRUCTION SAFETY

3.10.1 The *Contractor* shall be solely responsible for construction safety at the Place of the *Work* and for compliance with the rules, regulations and practices required by the OSHA and shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the *Work*.

1.19.GC 4.1 CASH ALLOWANCES

- a. Add new paragraph 4.1.3.1 as follows:

4.1.3.1 The *Consultant* will issue a Cash Allowance Disbursement Authorization (CADA) signed by the *Owner*, *Contractor* and *Consultant*.

- b. Add new paragraph 4.1.8:

4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, competitive tenders for portions of the *Work*, to be paid for, out of cash allowances, pursuant to GC 6.2 change order.

1.20. **GC 4.2 CONTINGENCY ALLOWANCE**

- a. Delete GC 4.2 Contingency Allowance in its entirety.

1.21. **Add a new GC 5.0 – PROPER INVOICES as follows:**

“GC 5.0 PROPER INVOICES

5.0.1 On the 25th day of each month during the *Contract* Time, the *Contractor* will deliver to the *Consultant* a draft invoice of the *Contractor’s* proposed application for payment for all of the *Work* performed by the *Contractor* in that month, including an estimate of the *Work* to be performed and Products to be delivered at the date of such application for payment but before the end of that month, in order to facilitate and expedite payments under GC 5.2 – APPLICATIONS FOR PAYMENT, GC 5.3 – PAYMENT and GC 5.5 – FINAL PAYMENT.

5.0.2 The *Contractor* shall review with the *Consultant* and the *Owner*, at a scheduled time, the draft invoice and application for payment and the percentage of the *Work* completed for each item indicated in the schedule of values. This procedure shall be complied with for each draft invoice and application for payment.

5.0.3 All invoices and applications for payment submitted by the *Contractor* shall comply in all ways with the *Construction Act*.

5.0.4 Nothing in paragraphs 5.0.1 or 5.0.2 is intended to condition, pre-condition, prevent or delay the *Contractor’s* right to submit its applications for payment in accordance with this *Contract* and the *Construction Act*.”

1.22. **GC 5.1 FINANCING INFORMATION REQUIRED BY THE OWNER**

- a. Revise the heading “GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER” to read “GC 5.1 FINANCING INFORMATION REQUIRED”

- b. In paragraph 5.1.1 delete from line one (1), “before signing the *Contract*”
- c. In paragraph 5.1.1 delete from line one (1), “thereafter”
- d. In paragraph 5.1.1 add new sentence as follows:

“The *Contractor* shall, at the request of the *Owner*, promptly from time to time furnish to the *Owner* reasonable evidence that the financial arrangements have been made to fulfill the *Contractor’s* obligations under the *Contract*. “

- e. Delete 5.1.2 in its entirety and substitute new paragraph 5.1.2 as follows:

5.1.2 The *Owner* and *Contractor* shall notify each other in writing of any material change in its financial arrangements during the performance of the *Contract*.

1.23.GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

- a. Add new paragraphs 5.2.9, 5.2.10 and 5.2.11 as follows:

5.2.9 “Prior to each application for payment, the *Contractor* and *Consultant* shall jointly check the progress of the *Work*.”

5.2.10 “The *Contractor* shall submit to the *Consultant*, with each application, the following documentation:

- .1 a Statutory Declaration CCDC 9A certifying that all accounts of the *Contractor* and all *Subcontractors* and *Suppliers* relative to the *Project* have been paid in full, less only the amounts of holdback due to them;
- .2 the documents required under GC 10.4 demonstrating compliance by the *Contractor* and all *Subcontractors* with workers compensation legislation, including a certificate from the applicable authority;
- .3 all information and documents required to be included for a proper invoice under applicable *Payment Legislation*; and
- .4 such additional documents as the *Owner* or the *Consultant* may reasonably require.”

5.2.11 “The *Owner* may, in its discretion, reject any application for payment that does not comply with this *Contract* and the applicable *Payment Legislation*, or the *Owner* may withhold up to 10% of the amounts otherwise payable in relation to that application for payment until such application for payment includes all of the documents and information required of a proper invoice and by this *Contract* and the applicable *Payment Legislation*.”:

1.24.GC 5.3 PAYMENT

- a. Delete from line 5.3.1.1, “calendar” and substitute “*Working Days*”.
- b. Delete paragraph 5.3.1.2 in its entirety and substitute new paragraph 5.3.1.2:

5.3.1.2 “The *Owner* shall make payment to the *Contractor* on account as provided for in Article A5 of the *Contract*, payment no later than twenty-eight (28) calendar days after the date of a complete certificate of payment is issued by the *Consultant*, and in any event, in compliance with *Payment Legislation*.”

- c. Add new paragraph 5.3.2 as follows:

5.3.2 “The *Owner* shall be entitled to deduct from or set off against any payment of the *Contract Price* and any other amounts payable by the *Owner* to the *Contractor* under this Agreement:

- .1 any amount expended by the *Owner* in exercising the *Owner’s* rights under this Agreement to perform any of the *Contractor’s* obligations that the *Contractor* has failed to perform;
- .2 any amount paid by the *Owner* directly to *Subcontractors* in respect of *Work* for which the *Owner* previously paid the *Contractor*;
- .3 any damages, costs or expenses (including, without limitation, reasonable legal fees and expenses) incurred by the *Owner* as a result of the failure of the *Contractor* to perform any of its obligations under this Agreement;
- .4 a reasonable amount on account of any outstanding *Work* or any outstanding deficiencies; and,
- .5 any other amount owing from the *Contractor* to the *Owner* under this Agreement.”

1.25.GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

- a. DELETE paragraph 5.4.1 and replace with the following:

5.4.1 The *Consultant* will review the *Work* to verify the validity of the application and shall promptly, and in any event, no later than 20 calendar days after receipt of the *Contractor’s* complete deficiency list and application, the *Consultant* shall:

- .1 prepare a final deficiency list incorporating all items to be completed or corrected. Each item is to have an indicated value for correction or completion, for the purposes of the Warranty/Deficiency Holdback. The final deficiency list complete with values is to be included with the

Consultant's draft verification and shall be reviewed with the *Owner* prior to 5.4.1.2.

- .2 having completed 5.4.1.1, the *Consultant* shall:
 - .1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or
 - .2 state the date of *Substantial Performance* of the *Work* in a certificate and issue a copy of that certificate to each the *Owner* and the *Contractor*.

- b. Add new paragraph 5.4.2 as follows:

"5.4.2 The *Contractor* shall submit, with the application for *Substantial Performance* of the *Work*, all guarantees, warranties, certificates, testing and balancing reports, distribution system diagrams, as-built drawings, and specifications, spare parts, maintenance materials and any other materials or documentation required to be submitted under the *Contract*, together with written proof, acceptable to the *Owner* and the *Consultant*, that the *Work* has been substantially performed in conformance with the requirements of municipal, governmental and utility authorities having jurisdiction. Failure to submit all of the foregoing materials and documentation in conformance with the *Contract* Documents shall be grounds for the *Consultant* to reject the *Contractor's* application for *Substantial Performance* of the *Work*."

- c. Delete in its entirety paragraph 5.4.5 and substitute new paragraph 5.4.5 as follows:

5.4.5 "Applications for progressive release of holdback will not be considered."

- d. Delete in its entirety paragraph 5.4.6

- e. Add new paragraphs 5.4.6 and 5.4.7 as follows:

5.4.6 "Immediately following the issuance by the *Consultant* of a certificate in accordance with paragraph 5.4.1.2, the *Contractor* shall, as applicable to the Place of the *Work*:

.1 submit written request for release of holdback including a declaration that no written notices of lien have been received by it;

.2 submit a Worker's Compensation Board Certificate of Clearance;

.3 submit a written confirmation from the bonding company that it has been notified of the intent to claim release of holdback money;

.4 publish a copy of the certificate in a construction trade newspaper in the Province of the Place of the *Work* (upon publication, the *Contractor* shall provide the *Consultant* and the *Owner* with a certificate of publication from the construction trade newspaper);

.5 do such other act as is required by the lien legislation for the Place of the *Work* to initiate the requisite time period prior to the expiration of the holdback period;

.6 complete the *Work* within sixty (60) calendar days and no payments will be processed between *Substantial Performance* of the *Work* and the completion of the *Work* as deemed by subsection 2(3) of the *Construction Act*

5.4.7 “The publication by the *Contractor* of the Certificate of *Substantial Performance* of the *Work* shall constitute a waiver by the *Contractor* of all claims whatsoever against the *Owner* under this *Contract* whether for a change in the *Contract Price*, extension of *Contract Time*, or otherwise, except those made in writing prior to the *Contractor’s* application for payment upon *Substantial Performance* of the *Work*, and still unsettled.”

1.26. GC 5.5 FINAL PAYMENT

- a. In paragraph 5.5.2 delete the words “10 calendar days after the issuance of a final certificate for payment” and replace with “the earlier of 20 calendar days after the issuance of a final certificate for payment and 28 calendar days after the receipt by the *Owner* of the *Contractor’s* application for final payment that includes all of the documents and information required for a proper invoice and by this *Contract*.”
- b. In paragraph 5.5.4 delete from line 2, "calendar" and substitute "*Working Days*".
- c. Add new paragraph 5.5.5 as follows:

5.5.5 As additional requirements for release of finishing construction lien holdback, the *Contractor* shall submit the following documentation:

- .1 *Contractor’s* written request for release of holdback, including a declaration that no written notices of lien have been received by it.
- .2 *Contractor’s* Statutory Declaration CCDC 9A
- .3 *Contractor’s* Workers’ Compensation Board Certificate of Clearance.
- .4 Written confirmation from the bonding company that it has been notified of the intent to claim release of holdback money.
- .5 Certificate of Search of Title from a solicitor testifying there are no liens registered relative to the *Work*.
- .6 Written statement that the *Work* has been performed to the requirements of the *Contract Documents*, itemizing approved Changes in the *Work*, *Consultant’s* written instructions and modifications required by authorities having jurisdiction.

1.27. **GC 6.1 CHANGES IN THE WORK**

- a. Add new paragraphs 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7, 6.1.8, 6.1.9, 6.1.10, 6.1.11 and 6.1.12 as follows:

6.1.3 “Unit prices included in the *Contract*, or prices pro rata thereto, will be used in the first instance in pricing changes.”

6.1.4 “Where work is added, the *Contract Price* shall be increased only by the net actual value of the work added including taxes, but excluding Value Added Taxes, plus the following, identified separately:

- i. *Contractor’s* mark-up on its own work:
 - Overhead and Profit: ten percent (10%)
- ii. *Contractor’s* mark-up on *Subcontractor’s* work:
 - Overhead and Profit: ten percent (10%)
- iii. *Subcontractor’s* mark-up on its own work
 - Overhead and Profit: ten percent (10%)
- iv. *Subcontractor’s* mark-up on *Subcontractors* work:
 - Overhead and profit: five percent (5%)”

6.1.5 “Overhead includes all site and head office overheads not including insurance and bonding.”

6.1.6 “Labour costs shall be the actual, prevailing rates at the Place of *Work* paid to the workers, plus statutory charges on labour including *Workers’* Compensation, Unemployment Insurance, Canada Pension, Vacation Pay, Hospitalization and Medical Insurance.”

6.1.7 “Quotations for changes to the *Work* shall be accompanied by itemized breakdowns together detailed, substantiating quotations or cost vouchers from *Subcontractors* and *Suppliers*, submitted in a format acceptable to the *Consultant*.”

6.1.8 “Unit and Alternative Prices included in the *Contract* include Supply, Installation, Products, equipment, services, materials, labour, overhead, profit and taxes, but exclude Value Added Taxes.”

6.1.9 “*Owner*, through the *Consultant*, reserves the right to authorize payment for Changes in the *Work* by means of Cash Allowance Disbursement Authorizations.”

6.1.10 “When both additions and deletions covering related work or substitutions are involved in Changes in the *Work*, payment including overhead and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the *Work*.”

6.1.11 “If any change or deviation in, or omission from the *Work* is made by, which the amount of *Work* to be performed is decreased, or if the whole or a portion of the *Work* is dispensed with, no compensation is claimable by the *Contractor* for any loss of anticipated profit in respect thereof.”

6.1.12 “It will be the *Contractor’s* responsibility to notify each applicable bonding company of all changes in the *Work* so that the any applicable performance bond will not be invalidated. Any change to the *Contract Price* or construction cost by more than 10% (or such lesser threshold if a bonding company’s terms require it) shall obligate the *Contractor* to update all Bonds with the change in value and the cost of the same shall be included in the *Contractor’s* cost for overhead. *Contractor* shall provide evidence of any such amended bonds to reflect this change in value from time to time.”

1.28. GC 6.2 CHANGE ORDER

- a. In paragraph 6.2.1 add at the end of the first sentence “...in the form of a completed Change Order.”
- b. In paragraph 6.2.1, immediately following the words “*Contract Price*, if any,” in the third line, add the words “in accordance with paragraphs 6.1.3 to 6.1.11,”.

1.29. GC 6.3 CHANGE DIRECTIVE

- a. Delete paragraph 6.3.2 in its entirety.
- b. Delete paragraph 6.3.3 in its entirety.
- c. In paragraph 6.3.6, add the words “in accordance with paragraphs 6.1.3 to 6.1.11” immediately following the word “determined” in the first line.
- d. Delete the words “contributions, assessments or taxes” from paragraph 6.3.7.1.
- e. Delete paragraph 6.3.7.7 in its entirety.
- f. Delete paragraph 6.3.11 in its entirety.

1.30. GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- a. Delete paragraph 6.4.1 and replace with the following:

6.4.1.1 Prior to the submission of the bid on which the *Contract* was awarded, the *Contractor* confirms that it investigated the Place of the *Work* and, in doing so, applied to that investigation the degree of care and skill required by paragraph 3.1.4.

6.4.1.2 The *Contractor* is deemed to assume all risk of conditions or circumstances now existing or arising in the course of the *Work* which could make the work more expensive or more difficult to perform than was contemplated at the time the *Contract* was executed, including the risk of the presence of Asbestos. Notwithstanding any other term of the *Contract Documents*, no claim or change request by the *Contractor* will be valid or considered by the *Owner* or the *Consultant* in connection with the presence of Asbestos, or in connection with conditions which could reasonably have been ascertained by an investigation or other due diligence undertaken prior to the execution of the *Contract*.

- b. Amend paragraph 6.4.2 by adding a new first sentence as follows:

“Having regard to paragraph 6.4.1, if the *Contractor* believes that the conditions of the *Place of the Work* differ materially from those reasonably anticipated, differ materially from those indicated in the *Contract Documents* or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1, it shall provide the *Owner* and the *Consultant* with Notice in Writing no later than five (5) *Working Days* after the first observation of such conditions.”

- c. Add new paragraph 6.4.5 as follows:

6.4.5 “No claims for additional compensation or for an extension of *Contract Time* shall be allowed if the *Contractor* fails to give Notice in Writing to the *Owner* or *Consultant*, as required by paragraph 6.4.2.”

- d. Add new paragraph 6.4.6 as follows:

6.4.6 “The *Contractor* acknowledges and declares its understanding and awareness that any information furnished by the *Owner* is approximate and speculative only and is not in any manner guaranteed by the *Owner*.”

1.31. GC 6.5 DELAYS

- a. 6.5.1: Delete the words after the word “for” in the fourth line of paragraph 6.5.1, and add the words “...reasonable direct costs directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity).”
- b. 6.5.2: Delete the words after the word “for” in the last sentence of paragraph 6.5.2, and add the words “...reasonable direct costs directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity).”
- c. 6.5.3: Delete paragraph 6.5.3 in its entirety and REPLACE it with the following:

“6.5.3 If the *Contractor* is delayed in the performance of the *Work* by *Excusable Delay*, then the *Contract Time* shall be extended, and the *Construction Schedule* adjusted, for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from the actions of the *Owner*.”

d. Add new paragraphs 6.5.6, 6.5.7 and 6.5.8 as follows:

6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone directly or indirectly employed or engaged by the *Contractor*, or by any cause within the *Contractor's* control, then the *Contract Time* may be extended for such reasonable time as the *Owner* may decide in consultation with the *Consultant* and the *Contractor*. The *Contractor* acknowledges that the *Contract Time* is a material component to the *Contract*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including, but not limited to,

- .1 the cost of all additional services required by the *Owner* from the *Consultant* or any project managers, or others employed or engaged by the *Owner*, and in particular, the costs of the *Consultant's* services during the period between the date of *Substantial Performance* of the *Work* stated in Article A-1 herein, as the same may be extended through the provision of these General Conditions, and any later or actual date of *Substantial Performance* of the *Work* achieved by the *Contractor*; and
- .2 all costs and expenses relating to the relocation and of students and staff members, including the rental or leasing related costs of alternative space for students and staff.

6.5.7 Without limiting the obligations of the *Contractor* described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS or GC 9.4 – CONSTRUCTION SAFETY, the *Owner* or *Consultant* may, by notice in writing, direct the *Contractor* to stop the *Work* where the *Owner* or *Consultant* determines that there is an imminent risk to the safety of persons or property at the *Place of the Work*. In the event that the *Contractor* receives such notice, it shall immediately stop the *Work* and secure the site. The *Contractor* shall not be entitled to an extension of the *Contract Time* or to an increase in the *Contract Price* unless the resulting delay, if any, would entitle the *Contractor* to an extension of the *Contract Time* or the reimbursement of the *Contractor's* costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3.

6.5.8 Notwithstanding any of the foregoing terms, the *Contractor* shall not be entitled to be reimbursed for costs relating to any delay if and to the extent that there was a concurrent delay caused by the *Contractor*.

1.32. **GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT**

- a. In paragraph 7.1.2 add after "substantial degree" the following words "... , or the *Contractor* fails to conform to any relevant federal, provincial, or municipal law, regulation, by-law or other requirement, including, without limitation, any applicable health and safety act or regulation."

- b. Add a new subparagraph 7.1.3.4 as follows:

"An "acceptable schedule" as referred to in subparagraph 7.1.3.2. means a schedule approved by the *Consultant* and the *Owner* wherein the default can be corrected within the balance of the *Contract* Time and shall not cause delay to any other aspect of the *Work* or the work of other contractors, and in no event shall it be deemed to give a right to extend the *Contract* Time."

- c. Delete 7.1.4.1 and replace it with the following:

7.1.4.1 "Correct such default and deduct the cost, including *Owner's* expenses, thereof from any payment then or thereafter due the *Contractor*."

- d. In subparagraph 7.1.5.3 delete the words: "however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract* Price, the *Owner* shall pay the *Contractor* the difference;"

- e. Add new paragraphs 7.1.7, 7.1.8, 7.1.9., 7.1.10, 7.1.11 and 7.1.12 as follows:

7.1.7 In addition to its right to terminate the *Contract* set out herein, the *Owner* may terminate this *Contract* at any time for any other reason and without cause upon giving the *Contractor* fifteen (15) *Working Days* Notice in Writing to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed including reasonable profit, for loss sustained upon Products and Construction Equipment, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*, but in no event shall the *Contractor* be entitled to be compensated for any loss of profit on unperformed portions of the *Work*, or indirect, special, or consequential damages incurred.

7.1.8 The *Owner* may suspend *Work* under this *Contract* at any time for any reason and without cause upon giving the *Contractor* Notice in Writing to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of suspension and be compensated for all actual costs incurred arising from the suspension, including reasonable profit, for loss sustained upon Products and Construction Equipment, and such other damages as the *Contractor* may have sustained as a result of the suspension of the *Work*, but in no event shall the *Contractor* be entitled to be compensated for any indirect, special, or consequential damages incurred. In the event that the suspension continues for

more than sixty (60) calendar days, the *Contract* shall be deemed to be terminated and the provisions of paragraph 7.1.6 shall apply.

7.1.9 In the case of either a termination of the *Contract* or a suspension of the *Work* under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, SUSPEND THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall use its best commercial efforts to mitigate the financial consequences to the *Owner* arising out of the termination or suspension, as the case may be.

7.1.10 Upon the resumption of the *Work* following a suspension under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, SUSPEND THE WORK OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* will endeavour to minimize the delay and financial consequences arising out of the suspension.

7.1.11 The *Contractor's* obligations under the *Contract* as to quality, correction, and warranty of the *Work* performed by the *Contractor* up to the time of termination or suspension shall continue after such termination of the *Contract* or suspension of the *Work*.

7.1.12 Upon a termination of the *Contract*, the *Owner* may, but is not obliged to, publish a notice of termination in the form and manner prescribed in the *Construction Act*, if applicable. For greater certainty, a termination in accordance with this GC 7.1 will be effective whether or not a notice of termination is published.”

1.33. **GC 7.2 CONTRACTOR'S RIGHT TO STOP THE WORK OR TERMINATE THE CONTRACT**

- a. Delete “20 *Working Days*” in paragraph 7.2.2, and substitute with “60 days”.
- b. Delete paragraph 7.2.3.1 in its entirety.
- c. Delete paragraph 7.2.3.2 in its entirety.
- d. In paragraph 7.2.3 delete from line two (2) of clause 7.2.3.4 “OF THE OWNER”.
- e. Delete in paragraph 7.2.4 the words “5 *Working Days*” and substitute “30 *Working Days*” thereafter.
- f. Delete paragraph 7.2.5 and replace it with the following:

7.2.5 If the default cannot be corrected within the 5 Working Days specified in paragraph 7.2.4, the Owner shall be deemed to have cured the default if it:

- .1 commences correction of the default within the specified time;
- .2 provides the Contractor with an acceptable schedule for such correction; and,
- .3 completes the correction in accordance with such schedule.

g. Add a new paragraph 7.2.6 as follows:

7.2.6 “If the Contractor terminates the Contract under the conditions described in GC 7.2 – CONTRACTOR’S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the Contractor shall be entitled to be paid for all Work performed to the date of termination, as determined by the Consultant. The Contractor shall also be entitled to recover the direct costs associated with termination, including the costs of demobilization and losses sustained on Products and Construction Equipment. The Contractor shall not be entitled to any recovery for any special, indirect or consequential losses, including loss of profit.”

1.34. GC 8.1 AUTHORITY OF THE CONSULTANT

- a. In paragraph 8.1.1 add to line three (3), prior to “findings”, the words “interpretation and”.
- b. Delete paragraph 8.1.2 in its entirety.
- c. Delete paragraph 8.1.3 in its entirety.
- d. Add new paragraphs 8.1.2, 8.1.3, 8.1.4, 8.1.5, 8.1.6 and 8.1.7 as follows:

8.1.2 “The claimant shall give written notice of such dispute to the other party no later than twenty (20) Working Days after the receipt of the Consultant’s interpretations or findings given under GC 2.2 – ROLE OF THE CONSULTANT. Such notice shall set forth particulars of the matters in dispute, the probable extent and value of the damage and the relevant provisions of the Contract Documents. The other party shall reply to such notice no later than ten (10) Workings Days after it receives or is considered to have received it, setting out in such reply its grounds and other relevant provisions of the Contract Documents.”

8.1.3 “If the matter in dispute is not resolved promptly, the Consultant will give such instructions as, in its opinion, are necessary for the proper performance of the Work and to minimize delays pending settlement dispute. The parties shall act immediately according to such instruction; it being understood that by so doing neither party will jeopardize any claim it may have. If it is subsequently determined that such instructions were in error or at variance with the Contract Documents, the Owner shall pay the Contractor reasonable costs incurred by the Contractor in

carrying out such instructions which it was required to do beyond those which the *Contract* Document correctly understood and interpreted would have required it to do, including costs resulting from interruption of the *Work*.”

8.1.4 “It is agreed that no act by either party shall be construed as a renunciation or waiver of any of its rights or resources, provided it has given notices in accordance with paragraph 8.1.2 and has carried out the instructions as provided in paragraph 8.1.3.”

8.1.5 “If the parties have agreed in writing in this Agreement or by subsequent agreement to submit disputes to arbitration, then the dispute shall be submitted to arbitration in accordance with the provisions of the arbitration legislation applicable to the Place of *Work*.”

8.1.6 “If no provision or agreement is made for arbitration or the use of any mediation or adjudication mechanisms hereunder, then either party may submit the dispute to such juridical court or tribunal as the circumstances may require.”

8.1.7 “In recognition of the obligation by the *Contract* to perform the disputed work as provided in paragraph 8.1.3, it is agreed that settlement of dispute proceedings may be commenced immediately following the dispute in accordance with the foregoing settlement of dispute procedures.”

1.35. **GC 8.2 Adjudication**

- a. Add new paragraph 8.2.2 as follows:

8.2.2 “The commencement of an adjudication under applicable *Payment Legislation* will not be deemed to be a stay, suspension, termination or bar of any other dispute resolution process.”

1.36. **GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION**

- a. Delete GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION in its entirety.

1.37. **GC 8.4 RETENTION OF RIGHTS**

- a. Delete GC 8.4 RETENTION OF RIGHTS in its entirety.

1.38. **GC 9.1 PROTECTION OF PERSONS AND PROPERTY**

- a. In paragraph 9.1.1 delete “except damage which occurs as the result of:

- .1 errors in the *Contract* Documents;
- .2 acts or omissions by the *Owner*, the *Consultant* other contractors, their agents and employees.”

- b. Add new paragraphs 9.1.5 and 9.1.6 as follows;

9.1.5 “The *Contractor* shall not undertake to repair and/or replace any damage whatsoever to adjoining property or acknowledge the same was caused by the *Contractor*, without first consulting the *Owner* and receiving written instructions as to the course of action to be followed. ”

9.1.6 “Notwithstanding paragraph 9.1.5, where there is danger to the life or property, the *Contractor* may take such emergency action as is necessary to remove the danger and shall indemnify and hold harmless the *Owner* and the *Consultant*, their agents and employees from and against claims, demands, losses, costs, damages, actions, suits or proceedings by third parties that arise out of, or are attributable to such action.

1.39. **GC 9.4 CONSTRUCTION SAFETY**

- a. Delete paragraph 9.4.1 in its entirety and substitute new paragraph 9.4.1 as follows:

9.4.1 “The *Contractor* shall, at its sole cost, be solely responsible for:
.1 construction safety at the Place of *Work* and for compliance with the rules. Regulations and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Performance of the *Work*;
.2 registering the notice of project for the Project under the OHSA; and
.3 acting as, and carrying out the responsibilities of, “prime contractor” under the OHSA.

- b. Add new paragraph 9.4.6 as follows::

9.4.6 “The *Contractor* acknowledges and is aware of the *Contractor’s* responsibilities under the OHSA having jurisdiction in the Place of the *Work* and that such responsibilities have been brought to the *Contractor’s* attention by the *Owner*, and the *Contractor* shall indemnify and save harmless the *Owner*, its agents, trustees, officers, directors, employees, *Consultants*, successors, appointees, and assigns from and against the consequences of any and all safety infractions committed by the *Contractor* under the occupational health and safety legislation in force at the Place of the *Work* including the payment of legal fees and disbursements on a substantial indemnity basis.”

1.40. **GC 10.2 LAWS, NOTICES, PERMITS AND FEES**

- a. In paragraph 10.2.2 change “The *Owner*” to read “The *Contractor*”, in the first line, and add the following second sentence:

“The *Contractor* shall pay for, post, deliver and provide all required security deposits, development charges or similar levies required by the municipality, school boards or other public authorities having jurisdiction that are required to be paid at

the same time as the issuance of any required permit, consent, approval or similar authorization to proceed with the *Work*”.

- b. Add new paragraph 10.2.8 as follows:

10.2.8 “The *Contractor* shall furnish all certificates that are required or given by the appropriate governmental authorities as evidence that the *Work* as installed conforms with the laws and regulations of authorities having jurisdiction, including certificates of compliance for the *Owner’s* occupancy or partial occupancy. The certificates are to be final certificates giving complete clearance of the *Work*, in the event that such governmental authorities furnish such certificates.”

1.41. **GC 11.1 INSURANCE**

- a. In paragraph 11.1.1.1 add the following to the bottom of the paragraph:

“General Liability Insurance shall be in the name of the *Contractor* with the *Owner* and *Consultants* named as additional insured with a limit of no less than \$5,000,000.00 (5 million dollars) per occurrence and with a property damage deductible not exceeding \$10,000.00.”

- b. In paragraph 11.1.1.2 Motor Vehicle Public Liability and Property Insurance add the following to the bottom of the paragraph:

“Motor Vehicle Public Liability and Property Insurance shall be in the name of the *Contractor* with the *Owner* and *Consultant* named as the additional insured on all owned and rented equipment with a limit of no less than \$2,000,000.00 (2 million dollars) inclusive prior to commencing the *Work*.”

- c. Add paragraph 11.1.1.8: *Owner* and *Consultant(s)* are as follows:

- i. *Owner*:
Grand Erie District School Board
349 Erie Avenue
Brantford, ON N3T 5V3
- ii. *Architect*:
Grguric Architects Inc
28 King St. E.,
Unit B
Stoney Creek, ON L8G 1J8
- iii. *Structural Engineer*:
Doytch & Filo Engineering Inc.
5063 North Service Rd
Suite 200
Burlington, ON L7L 5H6

iv. Mechanical/Electrical Engineer:
Dynamis Engineering Inc
22 Islington Ave
Suite 260
Toronto, ON M8V 3W7

v. Civil Engineer:
J.H Cohoon Engineering Ltd
44 Hardy Rd
Unit 1
Brantford, ON N3T 5L8

d. Add new paragraph 11.1.1.9 as follows:

11.1.1.9 “The insurance shall preclude subrogation claims by the insurer against anyone insured thereunder.”

1.42. **ADD NEW GC 11.2 Contract Security**

a. Add new paragraphs 11.2.1 and 11.2.2 as follows:

11.2.1 “The *Contractor* shall, prior to commencement of the *Work* or within the specified time, provide to the *Owner* any *Contract* security specified in the *Contract Documents* or required by the *Construction Act*, including required bonds relating to public contracts, if applicable.”

11.2.2 “All required bonds shall be issued by a duly licensed surety company, which is permitted under the *Construction Act*, authorized to transact a business of suretyship in the Province of Ontario and shall be maintained in good standing until the fulfillment of the *Contract*. The form of the labour and material bond, and the performance bond, if required under this *Contract* or under the *Construction Act*, shall be in accordance with, and in the for set out in, the *Construction Act*.”

1.43. **GC 12.1 READY-FOR-TAKEOVER**

a. Add the following subparagraphs 12.1.1.9 and 12.1.1.10:

.9 the *Consultant* has provided a punchlist of deficiencies and incomplete items of the *Work*, and a plan for correcting or completing all punchlist item, to the *Consultant* and the *Owner*, and such list has been approved by the *Consultant* and the *Owner*, acting reasonably.

.10 the *Consultant* has provided a search of title to the relevant properties from a solicitor certifying that there are no liens registered relative to the *Work*.

1.44. **GC 12.2 EARLY OCCUPANCY BY THE OWNER**

- a. Delete paragraph 12.2.1, and substitute with the following:

“12.2.1 The *Owner* reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the Project even though the *Work* may not be substantially performed, provided that such taking possession and use will not interfere, in any material way, with the progress of the *Work*. The taking of possession or use of any such portion of the Project shall not be deemed to be the *Owner's* acknowledgement or acceptance of the *Work* or the Project, nor shall it relieve the *Contractor* of any of its obligations under the *Contract*.”

- b. Delete paragraph 12.2.3.2, and substitute with the following:

“.2 The *Contractor* shall cease to be responsible as prime contractor under the OHSA for such part as from this date, provided that: (1) the *Owner* shall not be considered or deemed to become prime contractor or employer for the remaining parts; (2) the *Contractor* remains responsible and liable to perform, complete, and if necessary correct all of the *Work* for such part, including all items identified in the punchlist of incomplete and deficient *Work* approved by the *Consultant*; and (3) the *Contractor* shall remain responsible for securing the perimeter of such part.

- c. Add new paragraphs 12.2.5 and 12.2.6 as follows:

12.2.5 Whether the Project contemplates *Work* by way of renovations in buildings which will be in use or be occupied during the course of the *Work* or where the Project involves *Work* that is adjacent to a structure which is in use or is occupied, the *Contractor*, without in any way limiting its responsibilities under the *Contract*, shall take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, to suppress dust and noise and to avoid conditions likely to propagate mould or fungus of any kind and all other steps reasonably necessary to promote and maintain the safety and comfort of the users and occupants of such structures or adjacent structures.

12.2.6 The *Owner* shall have the right to enter or, if compliant with the Ontario Building Code, occupy the *Work* in whole or in part for the purpose of placing fittings and equipment, or for other use before *Substantial Performance* of the *Work*, if, in the opinion of the *Consultant*, such entry and occupation does not prevent or substantially interfere with the *Contractor* in the performance of the *Contract* within the *Contract* Time. Such entry or occupation shall neither be considered as acceptance of the *Work*, nor in any way relieve the *Contractor* from its responsibility to complete the *Contract*.

1.45. **GC 12.3 WARRANTY**

- a. Add new clauses 12.3.7, 12.3.8, 12.3.9, 12.3.10, 12.3.11 and 12.3.12 as follows:

12.3.7 “Where required by the *Contract Documents*, the *Contractor* shall provide a Warranty/Maintenance Holdback of two percent (2%) as security for the performance of the *Contractor’s* obligations as set out in GC 12.3 WARRANTY. The Warranty/Deficiency Holdback shall remain in place for a period of one (1) year from date that the *Work* is *Ready-for-Takeover*. If the *Contractor* fails to comply or correct deficiencies, or satisfy warranties and maintenance obligations, to the reasonable satisfaction of the *Consultant* or the *Owner*, the *Owner* may use the *Warranty/Deficiency Holdback* monies to use its own forces or employ other contractors to complete or correct the deficiencies or satisfy warranty or maintenance requirements under the *Contractor Documents*. The Warranty/Deficiency Holdback shall not limit the *Contractor’s* obligation to correct any deficiencies to the *Work* or honour any warranty or maintenance obligations under the *Contract Documents*.”

12.3.8 “The *Contractor* shall provide fully and properly completed and signed copies of all warranties and guarantees required by the *Contract Documents*, containing:

- .1 the proper name of the *Owner*;
- .2 the proper name and address of the Project;
- .3 the date the warranty commences, which shall be at the “date of *Substantial Performance* of the *Work*” unless otherwise agreed upon by the *Consultant* in writing;
- .4 a clear definition of what is being warranted and/or guaranteed as required by the *Contract Documents*; and
- .5 the signature and seal (if required by the governing law of the *Contract*) of the company issuing the warranty, countersigned by the *Contractor*.”

12.3.9 “Should any *Work* be repaired or replaced during the time period for which it is covered by the specified warranty, a new warranty shall be provided under the same conditions and for the same period as specified herein before. The new warranty shall commence at the completion of the repair or replacement.”

12.3.10 “The *Contractor* shall ensure that its *Subcontractors* are bound to the requirements of GC 12.3 WARRANTY for the *Subcontractor’s* portion of the *Work*.”

12.3.11 “The *Contractor* shall ensure that all warranties, guarantees or other obligations for *Work*, services or Products performed or supplied by any *Subcontractor*, *Supplier* or other person in connection with the *Work* and such assignment shall be with the consent of the assigning party, where required by law, or by the terms of the party’s contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the *Owner* under the *Contract Documents*.”

12.3.12 “The *Contractor* shall commence or correct any deficiency within two (2) *Working Days* after receiving a notice from the *Owner* or the *Consultant*, and shall complete the *Work* as expeditiously as possible, except in the case where the deficiency prevents maintaining security or where basic systems essential to the ongoing business of the *Owner* and/or its tenants cannot be maintained operational as designed. In those circumstances all necessary corrections and/or installations of temporary replacements shall be carried out immediately as an emergency service. Should the *Contractor* fail to provide this emergency service within eight (8) hours of a request being made during normal business hours of the *Contractor*, the *Owner* is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the *Contractor’s* expense.”

1.46. GC 13.1 INDEMNIFICATION

- a. Delete paragraph 13.1 in its entirety and substitute with new paragraphs as follows:

13.1.1 “The *Contractor* shall indemnify and hold harmless the *Owner*, the *Consultant* and their respective partners, trustees, officers, directors, agents and employees from and against any and all claims, liabilities, expenses, demands, losses, damages, actions, costs, suits or proceedings (hereinafter called “Claims”), whether in respect of Claims suffered by the *Owner* or in respect of Claims by third parties, that directly or indirectly arise out of, or are attributable to the acts or omissions of the *Contractor*, its employees, agents, subcontractors, suppliers or any other persons for whom it is in law responsible (including, without limitation, claims that directly or indirectly arise out of, or are attributable to, loss to use or damage to the *Work*, the *Owner’s* property adjacent to the Place of *Work* or death or injury to the *Contractor’s* personnel.)”

13.1.2 “The provisions of GC 13.1 INDEMNIFICATION shall survive the termination of the *Contract*, however caused and no payment or partial payment, no issuance of a final certificate of payment and no occupancy in whole or in part of the *Work* shall constitute a waiver or release of any provisions of GC 13.1.”

1.47. GC 13.2 WAIVER OF CLAIMS

- a. In the third line of paragraph 13.2.1, add the words “claims for delay pursuant to GC 6.5 DELAYS and” after the word “limitation”. Add the words “(collectively “Claims”)” after “Ready-for-Takeover” in the fourth line.
- b. In paragraph 13.2.1.1, change the word “claims” to “Claims” and change the word “claim” to “Claim”.
- c. In paragraph 13.2.1.2, change the word “claims” to “Claims”.
- d. Delete paragraph 13.2.1.3 in its entirety.

- e. In paragraph 13.2.1.4, change the word “claims” to “Claims”.
- f. In paragraph 13.2.2, change the words “in paragraphs 13.2.1.2 and 13.2.1.3” to “in paragraph 13.2.1.2”. Change the word “claims” to “Claims” in both instances and change the word “claim” to “Claim”.
- g. Delete paragraph 13.2.3 in its entirety.
- h. Delete paragraph 13.2.4 in its entirety.
- i. Delete paragraph 13.2.5 in its entirety.
- j. In paragraph 13.2.6, change the word “claim” to “Claim” in all instances in the paragraph.
- k. Delete paragraph 13.2.8 in its entirety and substitute new paragraph 13.2.8 as follows:

13.2.8 “The *Contractor* giving notice in writing of Claim as provided for in GC 13.2 – Wavier of Claims, shall submit within a reasonable time a detailed account of the amount claimed.
- l. Delete paragraph 13.2.9 in its entirety and substitute new paragraph 13.2.9 as follows:

13.2.9 “Where the even or series of events giving rise to a claim made under paragraph 13.2.1 has a continuing effect, the detailed account submitted under paragraph 13.2.8 shall be considered to be an interim account, and the *Contractor* shall submit further interim accounts, at reasonable intervals, giving the accumulated amount of the Claim and any further grounds upon which it is based. The *Contractor* shall submit a final account after the end of the effects resulting from the event or series of events.”

1.48. **GC 14.1 Other Provisions**

Add new **Part 14 OTHER PROVISIONS** as follows:

GC 14.1 CONSTRUCTION LIENS

14.1.1 In the event that a claim for lien is registered against the Project by a Subcontractor, Sub-subcontractor or Supplier, and provided the Owner has paid all amounts properly owing under the Contract, the Contractor shall, at its own expense:

- .1 within 20 calendar days, ensure that any and all claims for lien and certificates of action are discharged, released, or vacated by the posting of security or otherwise; and
- .2 in the case of written notices of lien, ensure that such notices are withdrawn, in writing.

14.1.2 In the event that the Contractor fails to conform with the requirements of paragraph 14.2.1, the Owner may fulfil those requirements without Notice in Writing to the Contractor and set off and deduct from any amount owing to the Contractor, all costs and associated expenses, including the costs of posting security and all legal fees and disbursements associated with discharging or vacating the claim for lien or certificate of action and defending the action. If there is no amount owing by the Owner to the Contractor, then the Contractor shall reimburse the Owner for all of the said costs and associated expenses.

14.1.3 Notwithstanding any other provision in the Contract, the Consultant shall not be obligated to issue a certificate and the Owner shall not be obligated to make payment to the Contractor if, at the time such certificate or payment was otherwise due:

- .1 a claim for lien has been registered against the Project lands, or
- .2 if the Owner has received written notice of a lien, or
- .3 the Owner or Consultant reasonably believe that any party has purported to retain title to Products or materials in respect of which an application for payment has been made.

14.1.4 Without limiting the foregoing, the Contractor shall, if requested by the Owner, defend, indemnify and save the Owner harmless from the amount of all such claims and the costs of defending any and all actions commenced against the Owner pursuant to the construction/builder's lien legislation in force at the Place of the Work, including the legal costs of the Owner, unless the lien was a direct result of a breach of the Contract by the Owner or the non-payment by the Owner of a valid charge or claim under the Contract.

14.1.5 GC 14.1 CONSTRUCTION LIENS, does not apply to construction liens claimed by the *Contractor*.

GC 14.2 ASBESTOS

14.2.1 The Contractor acknowledges and confirms that it:

- .1 has been notified that every Grand Erie District School Board building may contain asbestos in the form of floor tile, pipe wrap, transite pipe or wall panels, acoustic or texture plaster, any ceiling tile this can include 2x2 and 2x4 suspended tile in grid, drywall compound and possibly in other building materials;
- .2 understands that the *Work*, including the *Contractor's* cost and timing for completing the *Work*, may be impacted by the presence of *Asbestos*, and confirms that the *Contractor* has taken the potential presence of asbestos into account in tendering for the *Work*;
- .3 has received access to and has reviewed *Owner's* current online Asbestos Survey Report (which is a record of the location of all Asbestos-containing materials present within a building, or those suspected of containing Asbestos), which is available at: <http://gedsb.ebasefm.com/login>

Account Name/Email: Asbestos
Password: Report

- .4 has received the *Owner's* Asbestos Procedure document FT107, which is available at:
https://www.granderie.ca/application/files/6015/8265/4747/FT107_Asbestos.pdf

and will comply with all requirements thereof, and the requirements of any separate Asbestos Management Plan, including but not limited to the following requirements:

External Contractors will:

- a. Review the current Asbestos Survey Report before starting any work.
- b. Provide written acknowledgement that they have read and will comply with the requirements of the "Asbestos on Construction Projects and in Buildings and Repair Operations Ont. Reg. 278/05" and the Grand Erie District School Board Asbestos Procedure
- c. Ensure that all employees under their control are trained in asbestos hazards and control procedures prior to conducting any work which may disturb asbestos, and provide documentation of training to the department which is contracting the work.
- d. In the event that ANY asbestos removal (Type 1, 2 or 3) needs to occur, external contractors conducting or supervising such work will provide documentation of training for all employees, supervisors and trades under their control. The training must meet the requirements of "Asbestos on Construction Projects and in Buildings and Repair Operations Ont. Reg. 278/05" under the Occupational Health and Safety Act and be approved by the Ministry of Training, Colleges and Universities (MTCU) effective November 1, 2007.
- e. Ensure that all employees, supervisors and trades under their control are informed about the location of asbestos-containing materials that may be disturbed.
- f. In the event that previously unidentified asbestos-containing material is discovered in the course of work, ensure that employees immediately stop all work and notify the department contracting the work.
- g. Only perform Type 2 and Type 3 Asbestos work as authorized under approved contract.
- h. Ensure that all asbestos waste is safely packaged and properly disposed of in accordance with legislative requirements

END OF SECTION 00800 – SUPPLEMENTARY ARTICLES AND CONDITIONS

SECTION 01005 – GENERAL INSTRUCTIONS

Refer to next page.

Includes the following Available Project Information:

- Landtek Geotechnical Assessment
- Davey Arborist Report/TPP

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End of Section

1. General

1. Examine the place of the work for the existing conditions, matters and limitations relating to the scope of work such as but not exclusively: access and egress to and from the place of the work, adjacent buildings, obstructions, services, actual and proposed grade (levels), soils conditions, landscaping, parking areas, services, and rights and interests of other parties affecting the deployment of the place of the work and the work to be done thereon.
2. Be responsible to ensure that the subcontractors shall also conduct a thorough examination and have full knowledge of conditions at the place of the work affecting their work.
3. **Disclaimer:**
The following reports are not part of the Contract Documents prepared by the Architect or his subconsultants. The reports were not prepared by or under the supervision of the Architect. While every effort has been made to attempt to provide comprehensive information for the purposes of design and tendering, the Architect and his consultants claim no responsibility for the accuracy of the information contained in the report. Bidders must satisfy themselves in regard to all matters relating to conditions that may affect either the methods of construction or the cost of the work before submitting bids or commencing the work.

2. Geotechnical Investigation Letter Report

Prepared by: Landtek Limited Consulting Engineers
File Reference: 22409
Dated: December 19, 2022
Total pages: 13 pages, following

3. Arborist Report

1. A copy of a Arborist Report with respect to the identified portion of the Work is being made available as part of the Bid Documents; titled as follows:
 - .1 Titled: Arborist Report (Pre-Construction Assessment)
Prepared by: Davey Resource Group
Dated: Revised March 21, 2023
No. of Pages: 21 pages, following
 - .2 Tree Preservation Plan – Drawings 1 to 5, following

End of Section



December 19, 2022
File: 22409

Grguric Architects Incorporated
28 King Street East,
Stoney Creek, Ontario
L8G 1J8

Attention: Mr. Walter Paolone, OAA, MRAIC – Architect

Dear Mr. Paolone,

**Re: Geotechnical Investigation Letter Report
Proposed Elementary School Addition, 141 Banbury Road, Brantford, Ontario**

Landtek Limited (herein “*Landtek*”) is pleased to submit this Geotechnical Investigation letter report for a proposed school addition at the existing Banbury Heights Elementary School (herein “*BHES*”) located at civic address 141 Banbury Road in Brantford, Ontario. Authorization to proceed with the work was received from Grguric Architects Incorporated (herein “*GAI*”) on October 4, 2022.

This letter report has been prepared for the Client, their nominated engineers, designers, and project managers pertaining to the proposed school addition at the existing Banbury Heights Elementary School located at civic address 141 Banbury Road in Brantford, Ontario. Further dissemination of this report is not permitted without Landtek’s prior written approval. Further details of the limitations of this report are presented as Enclosure A.

Background

From the drawing “*Site Plan*”, reference 2022-08-A1.00rev1 and dated September 21, 2022, as issued by GAI, it is understood that the proposed addition is to be located on the southwest side of the existing school structure. The proposed addition footprint is currently used as a daycare recreational area.

The addition is to be approximately 310 m² in plan area and comprise of a single-storey, at-grade structure with no basement or subsurface elements other than foundations.

It is understood that no new pavements or grade changes are proposed for the addition construction works. All services are expected to be fed from either the existing structure or from the above-ground service lines already present at the site, therefore no exterior service trenching is anticipated.

The purpose of the investigation was to determine the subsurface soil and groundwater conditions underlying the site, and to provide design parameters recommendations with regards to foundations and floor slabs for the proposed addition.



Site Description and Topography

The area of investigation is located to the southwest of the existing Banbury Heights Elementary School building footprint in Brantford, Ontario, and is centered at approximate grid reference 562070, 4782065 (UTM 17T coordinates). The Geodetic elevation of the ground surface at the site is approximately 221 m.

The school is located in a predominantly residential area, being bound to the north and south by residential properties. Banbury Road bounds the school to the west, with residential properties situated beyond. A playing field and agricultural land bounds the school to the east.

Subsurface Characterization

Based on a review of an existing geological publication for the site area, Ontario Geological Survey (herein "OGS") Map 2240: "*Quaternary Geology of the Brantford Area*", the site is underlain by silt and clay with minor sand deposits, identified as a sequence of the Lake Warren Formation.

According to the OGS Map P.1984 "*Paleozoic Geology of the Brantford Area*", the superficial geology is underlain by light brown dolostone of the Guelph Formation at significant depth beneath the site.

Information provided by historical borehole records from within the vicinity of the site, and held by the OGS, generally confirms the anticipated geological conditions beneath the site. Based on the data from records for Borehole ID 830527, located approximately 2 km to the southeast of the site, the superficial soil profile confirms the presence of silt and clay till deposits to a depth of at least 5.5 m below ground level.

Fieldwork and Investigation Methodology

Fieldwork undertaken at the site by Landtek included clearance of underground services, borehole layout, borehole drilling, soil sampling, and field supervision. Two boreholes (boreholes BH1 and BH2) were drilled on November 11th, 2022. The boreholes were logged using those standard symbols and terms defined in Enclosure B. The Borehole Location Plan, Drawing 22409-01, and associated borehole logs are provided in Enclosure C.

The boreholes were drilled using a Diedrich D-50 Limited Access drilling rig equipped with continuous flight, solid stem augers, and were advanced to depths of approximately 4.5 m below existing ground level under the full-time supervision of a representative of Landtek. Standard Penetration Tests (SPT's) and split spoon samples were taken at frequent depth intervals during drilling. No groundwater monitoring wells were installed, with all boreholes being backfilled to grade in accordance with Ontario Regulation (herein "O. Reg.") 903.

All soil samples were transported to Landtek's in-house, Canadian Council of Independent Laboratories (CCIL) certified laboratory and visually examined to determine their classification. Moisture contents were carried out on all samples. No chemical laboratory testing was completed during this investigation.

Borehole locations were established on site by Landtek with reference to existing site structures and features. Depth related remarks for each borehole were made relative to the ground level at each respective borehole location.

Subsurface Conditions

Surficial Cover Material

An approximately 100 mm thick layer of organic soil was encountered in borehole BH1, though this is not considered representative of the organic soil cover across the addition footprint in full as wood chips of the play area were encountered at the surface of borehole BH2. The wood chips also extend to a depth of approximately 100 mm below existing ground level.

Clayey Silt and Silty Clay

Clayey silt and silty clay deposits were encountered underlying the organic and fill materials in all boreholes and extends to the maximum drill depth of approximately 4.5 m below existing ground

level. The clayey silt and silty clay deposits are generally brown, and grey at depth in colour, and includes trace gravel and iron staining.

SPT “N” values ranging between 7 and 28 were recorded, indicating the deposits to be of a firm to very stiff, but generally very stiff consistency. Moisture contents ranging from 14 % to 29 %, were reported which is as to be expected of a moist to very moist soil with silt and clay as primary constituents. The moisture content testing results are presented on the borehole logs in Enclosure C.

Bedrock

Bedrock was not encountered during this investigation.

Groundwater

Groundwater was not encountered during drilling, with all boreholes remaining open to full drill depth and dry upon completion. It should be noted that groundwater conditions and surface water flow conditions are expected to vary according to the time of year and seasonal precipitation levels.

Engineering Considerations

Shallow Foundations in Native Soils

Based on the ground conditions observed at the borehole locations, it is considered by Landtek that bearing conditions to support conventional, concrete strip and pad footings for the proposed addition can be provided by the native silty clay till soils underlying the site area.

Table 1 summarizes the recommended geotechnical reactions at the Serviceability Limit State (herein “SLS”) and factored geotechnical resistances at the Ultimate Limit State (herein “ULS”) for the native soils. It should be noted that the design parameters have been determined by Landtek for the design stage only.

Table 1: Recommended Limit State Foundation Design Values

Founding Depth Range	Founding Stratum	Foundation Design Value	
		SLS ^{1 2}	ULS ^{3 4}
±1.2 m to ±2.5 m	Clayey Silt/Silty Clay	120 kPa	180 kPa

Notes:

1. The National Building Code general safety criterion for the serviceability limit states is: SLS resistance \geq effect of service loads.
2. Recommended SLS bearing values conform to Estimated Values based on soil types given in Tables K-8 and K-9 of the National Building Codes User’s Guide.
3. The ULS resistance factor for shallow foundations is 0.5, as given in Table K-1 of the National Building Code User’s Guide.
4. The National Building Code general safety criterion for the ultimate limit states is: factored ULS resistance \geq effect of factored loads.

Where the bearing levels of the footings are at different design elevations or where the footings of the new addition are to connect to those of the existing school structure, the footing base levels should be stepped along a line of 7V:10H, drawn upwards from the lowest footing, to avoid overlapping stresses.

Subsurface conditions can vary over relatively short distances and the subsurface conditions revealed at the test locations may not be representative of subsurface conditions across the site. Therefore, a Geotechnical Engineer should be engaged during construction to examine the exposed sub-soil quality and condition, and confirm the subsurface conditions are consistent with design assumptions. This is in compliance with field review requirements in the National Building Code, Volume 1, Clause 4.2.2.3.

Frost Susceptibility

The fine-grained, native soils encountered at shallow depths across the site should be considered sensitive to water and frost, and their physical and mechanical properties are dependent on in-situ moisture content.

As such, the founding soils at the site are considered to have a moderate to high frost susceptibility, being classified as Frost Group “F4” (Table 13.1 of the “Canadian Foundation Engineering Manual”, 4th Edition). However, the previously identified depths for foundations are considered to be below the maximum depth for frost penetration of 1.2 m in the Brantford area.



Should any re-grading be required as part of the proposed addition, particularly where adjacent to the existing school structure, it will be important to ensure that the associated exterior footings will have a minimum of 1.2 m of soil cover, or equivalent suitable insulation is applied for frost protection.

Settlement Considerations

Based on the outline information provided for the nature of the proposed development of the site, it is anticipated that the loads to be applied to the native soils will be of a generally low intensity. As such, associated settlements are not expected to be large. Therefore, the general limiting of the total settlement to 25 mm and the differential settlement to 19 mm by the recommended geotechnical reaction at the SLS is considered appropriate.

Seismic Design Consideration

Based on the soils conditions encountered, and in accordance with Table 4.1.8.4.A. of the current Ontario Building Code (herein "OBC"), the site is considered to be a 'D' Site Class for foundations seated within the native soils. The acceleration and velocity-based site coefficients, F_a and F_v , should be determined from Tables 4.1.8.4.B. and 4.1.8.4.C. respectively of the OBC for the above recommended Site Class. The seismic design data given in Table 1.2 of Supplementary Standard SB-1 in Volume 2 of the OBC, for selected Municipal locations, should be used to complete the seismic analysis.

Damp Proofing Considerations

Damp-proofing will not be required for at-grade structures.

In the event that any subsurface or basement structures are included in the final design, then the subsurface areas should be damp proofed and comply with the OBC requirements. As a minimum it is recommended that such a damp proofing system include a Delta Drainage Board or MiraDrain 2000 series product, or an approved alternative, along with an asphalt-based spray on wall coating.

Floor Slab Considerations

Based on the information provided to Landtek, it is anticipated that the floor slab subgrade will comprise of native clayey silt. The design of concrete slab may be made on the basis of a value of modulus of sub-grade reaction of 25 MPa/m on the surface of the native soils underlying the site.

It is recommended that a minimum 200 mm layer of clear 19 mm crushed quarried stone be used as the vapour barrier under the floor slab. The vapour barrier stone should meet the requirements of Ontario Provincial Standard Specifications (herein "OPSS") 1004 for 19 mm Type II clear stone. If a graded crushed stone is substituted for clear stone, the material should be limited to a maximum of 5 % fines (passing the 0.075 mm sieve).

The floor slab thickness should meet the specifications of the project based on anticipated floor loadings. The finished exterior ground surface should be sloped away from the building at a grade in the order of 2 %.

The concrete properties should meet the requirements of OPSS 1350. Contraction and isolation jointing practices should be in accordance with current Portland Cement Association recommendations, as given in the engineering bulletin "*Concrete Floors on Ground*", second edition, by R. E. Spears, and W. C. Panarese.

Excavation and Backfill Considerations

General Considerations

All temporary excavations and unbraced side slopes in the soils should conform to standards set out in the Occupational Health and Safety Act, Ontario Regulation 213/91 "*Construction Projects*" (herein "OHSA"). The subsurface soils to be encountered during excavation at the site are expected to behave as "Type 2" materials according to the OHSA classification in Part III. Type 2 soils are characteristic of the "*clayey silt to silty clay*" encountered from shallow depth beneath the site.

It should be possible to excavate the overburden soils with a hydraulic backhoe. Moist Type 2 soils are expected to be stable for short construction periods at slopes of approximately 45° to the horizontal (i.e., 1V:1H).

Consideration should be given to any existing trench or foundation excavations and associated backfill that may be present directly behind cut slopes that may appear to be stable on first excavation. In these circumstances, slopes can suddenly slough or collapse due to the affects of the adjacent backfill. Consequently, for excavation conditions that cannot satisfy the OSHA requirements for unbraced 1H:1V side slopes, temporary shoring should be installed to maintain safe working conditions. This may be more applicable to foundation excavations, particularly when in close proximity to the existing school structure.

It should be noted that the design of a temporary shoring system, should one be required, is the responsibility of the Contractor. Therefore, a specialist shoring contractor should be consulted to provide the most appropriate shoring type method and associated installation procedures. In any event, the shoring design should be based on the procedures outlined in the latest edition of the "*Canadian Foundation Engineering Manual*". It is also recommended that lateral and vertical movement of the shoring system be monitored during construction to ensure that movements are within the acceptable range.

Dewatering Consideration

Groundwater was not encountered during the investigation. This given and considering the relatively shallow excavation depths anticipated for the construction of the proposed addition, any localized groundwater seepages that may be encountered during excavation work should be able to be controlled by standard pumping equipment drawing from sumps at the base of the excavation.

Water seepage into open excavations is not expected to be a construction issue or be experienced to an extent that the project requires either registration under the Environmental Activity and Sector Registry (herein "*EASR*") framework (i.e., exceeding 50,000 l/day but less than 400,000 l/day) or a Permit To Take Water (herein "*PTTW*") for amounts greater than 400,000 l/day.

General Backfill Considerations

Backfill next to foundation walls. The native clayey silt and silty clay soils encountered at the site are expected to be reusable as trench backfill and backfill around the proposed structures on the site. Any variation in the moisture contents of the soils encountered may require selective separation of material to avoid the use of wet soil.

Any site servicing trenches should be backfilled and uniformly compacted to a density that minimizes the risk of long-term settlements. It is recommended that the target compaction specification for trench backfill be 97 % SPMDD with no individual test below 95 % SPMDD.

During inclement weather the native soils may become too wet to achieve satisfactory compaction. If construction is proposed for late in the year, a reduced level of trench compaction with a higher risk of future settlements is to be anticipated, and it is recommended that provisional contract quantities be established for the supply and placement of imported granular fill under such circumstances. The imported granular should meet the requirements of OPSS 1010 for Granular B Type I material as a minimum requirement.

Closure

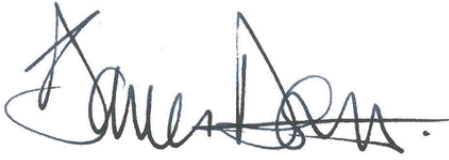
The Limitations of Report, as stated in Enclosure A, are an integral part of this report.

Soil samples will be retained and stored by Landtek for a period of three months after the issuing of this letter report. The samples will be disposed of at the end of the three-month period unless a written request from the Client to extend the storage period is received.

We trust that this letter report is satisfactory for your purposes, and please do not hesitate to contact our office if you have any questions.

Yours sincerely,

LANDTEK LIMITED



.....
James Dann, B.Eng. (Hons) ACSM
Manager, Geotechnical Projects



.....
Ralph Di Cienzo, P.Eng.
Consulting Engineer

Encs.

- Enclosure A: Limitations of Report
- Enclosure B: Symbols and Terms Used in the Report
Classification of Soils for Engineering Purposes
- Enclosure C: Drawing 22409-01 – Borehole Location Plan
Borehole Logs

ENCLOSURE A LIMITATIONS OF REPORT

The conclusions and recommendations given in this report are based on information determined at the borehole locations. Subsurface and ground water conditions between and beyond the Boreholes may be different from those encountered at the borehole locations, and conditions may become apparent during construction that could not be detected or anticipated at the time of the geotechnical investigation. It is recommended practice that Landtek be retained during construction to confirm that the subsurface conditions throughout the site are consistent with the conditions encountered in the Boreholes.

The comments made in this report on potential construction problems and possible remedial methods are intended only for the guidance of the designer. The number of Boreholes may not be sufficient to determine all the factors that may influence construction methods and costs. For example, the thickness and quality of surficial topsoil or fill layers may vary markedly and unpredictably. Additionally, bedrock contact depths throughout the site may vary significantly from what was encountered at the exact borehole locations. Contractors bidding on the project, or undertaking construction on the site should make their own interpretation of the factual borehole information, and establish their own conclusions as to how the subsurface conditions may affect their work.

The survey elevations in the report were obtained by Landtek Limited or others, and are strictly for use by Landtek in the preparation of the geotechnical report. The elevations should not be used by any other parties for any other purpose.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Landtek Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

This report does not reflect environmental issues or concerns related to the property unless otherwise stated in the report. The design recommendations given in the report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report. Since all details of the design may not be known, it is recommended that Landtek Limited be retained during the final design stage to verify that the design is consistent with the report recommendations, and that the assumptions made in the report are still valid.

ENCLOSURE B

SYMBOLS AND TERMS USED IN THE REPORT



RELATIVE PROPORTIONS		CLASSIFICATION BY PARTICLE SIZE	
Term	Range		
Trace	0 - 5%	Boulder -----	> 200 mm
A Little	5 - 15%	Cobble -----	80 mm - 200 mm
Some	15 - 30%	Gravel -	
With	30 - 50%	Coarse -----	19 mm - 80 mm
		Fine -----	4.75 mm - 19 mm
		Sand -	
		Coarse -----	4.75 mm - 2 mm
		Medium -----	2 mm - 0.425 mm
		Fine -----	0.425 mm - 0.75 mm
		Silt -----	0.075 mm - 0.002 mm
		Clay -----	< 0.002 mm

DENSITY OF NON-COHESIVE SOILS

Descriptive Term	Relative Density	Standard Penetration Test
Very Loose	0 - 15%	0 - 4 Blows Per 300 mm Penetration
Loose	15 - 35%	4 - 10 Blows Per 300 mm Penetration
Compact	35 - 65%	10 - 30 Blows Per 300 mm Penetration
Dense	65 - 85%	30 - 50 Blows Per 300 mm Penetration
Very Dense	85 - 100%	Over 50 Blows Per 300 mm Penetration

CONSISTENCY OF COHESIVE SOILS

Descriptive Term	Undrained Shear Strength kPa (psf)	N Value Standard Penetration Test	Remarks
Very Soft	< 12 (< 250)	< 2	Can penetrate with fist
Soft	12 - 25 (250 - 500)	2 - 4	Can indent with fist
Firm	25 - 50 (500 - 1000)	4 - 8	Can penetrate with thumb
Stiff	50 - 100 (1000 - 2000)	8 - 15	Can indent with thumb
Very Stiff	100 - 200 (2000 - 4000)	15 - 30	Can indent with thumb-nail
Hard	> 200 (> 4000)	> 30	Can indent with thumb-nail

Notes: 1. Relative density determined by standard laboratory tests.
 2. N value - blows/300 mm penetration of a 623 N (140 Lb.) hammer falling 760 mm (30 in.) on a 50 mm O.D. split spoon soil sampler. The split spoon sampler is driven 450 mm (18 in.) or 610 mm (24 in.). The "N" value is the Standard Penetration Test (SPT) value and is normally taken as the number of blows to advance the sampler the last 300 mm.

ENCLOSURE B CONTINUED
CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES
 ASTM Designation: D 2487 - 69 AND D 2488 - 69
 (Unified Soil Classification System)

Major Divisions		Group Symbols	Typical Names	Classification Criteria			
Coarse-grained soils More than 50% retained on No. 200 sieve *	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines Less than 5% pass No. 200 sieve GW, GP, SW, SP More than 12% pass No. 200 sieve GM, GC, SM, SC 5 to 12% pass No. 200 sieve Borderline classifications requiring use of dual symbols	$C_u = D_{60}/D_{10}$ greater than 4; $C_z = (D_{30})^2/(D_{10} \times D_{60})$ between 1 and 3	
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW	
			GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
		GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7			
		Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SP		Poorly graded sands and gravelly sands, little or no fines	Not meeting both criteria for SW
	Sands with fines			SM	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7		
	Fine-grained soils 50% or more passes No. 200 sieve *		Silts and clays Liquid limit 50% or less	ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Plasticity Chart For classification of fine-grained soils and fine fraction of coarse-grained soils. Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols. Equation of A-line: $PI = 0.73 (LL - 20)$
		CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silts			
OL		Organic silts and organic silts of low plasticity					
Silts and clays Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	<p>The Plasticity Chart plots Plasticity Index (Y-axis, 0 to 60) against Liquid Limit (X-axis, 0 to 100). The A-line is a straight line starting at (20, 0) and passing through (100, 60). Classification regions are defined as follows: - ML: Liquid Limit < 25, Plasticity Index < 4 - CL: Liquid Limit > 25, Plasticity Index < 4 - OL: Liquid Limit > 25, Plasticity Index < 7 - MH: Liquid Limit > 50, Plasticity Index < 25 - CH: Liquid Limit > 50, Plasticity Index > 25 - OH and MH: Liquid Limit > 75, Plasticity Index > 25 - Pt: Liquid Limit > 75, Plasticity Index > 10 - ML and OL: A hatched area below the A-line and above the U-line (PI = 0.25(LL - 20)) for Liquid Limit > 25.</p>			
		CH	Inorganic clays of high plasticity, fat clays				
		OH	Organic clays of medium to high plasticity				
		Highly organic soils	Pt		Peat, much and other highly organic soils		



ENCLOSURE C

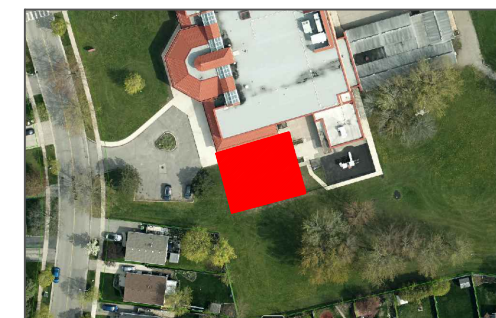
**DRAWING 22409-01 – BOREHOLE LOCATION PLAN
BOREHOLE LOGS**



LANDTEK LIMITED

205 Nebo Road, Unit 4B
Hamilton, Ontario L8W 2E1
p: +1 (905) 383-3733
engineering@landtek.ca
www.landtek.ca

project location



Location plan an extract from brantford.maps.arcgis.com

Legend:

- Approximate location of borehole drilled by Landtek Limited at November 11th, 2022

Notes:

Base plan an extract of the drawing "Site Plan", reference 2022-08-A1.00rev1 and dated 21 September 2022, as issued by Grguric Architects Incorporated.

revisions

#	date	revision/comment
1	dec 19, 2022	issued for report

client

Grand Erie District School Board
% Grguric Architects Incorporated

municipality

The Corporation of the
City of Brantford

project

Geotechnical Investigation
141 Banbury Road

sheet

Borehole Location Plan

date: december 19, 2022

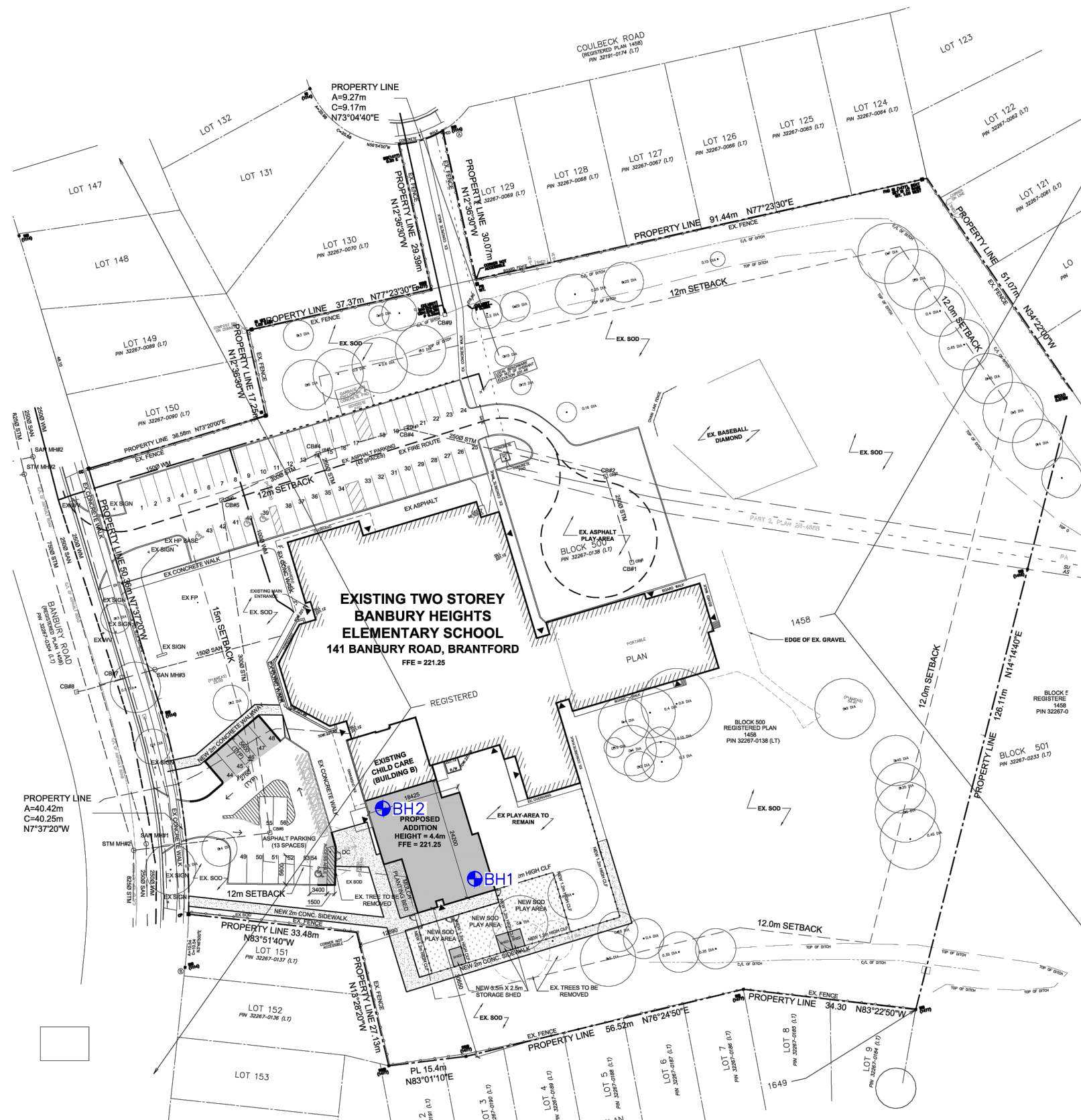
drawn: mdc

checked: jd

project #: 22409

scale: 1:1,000

22409-01



LOG OF BOREHOLE BH1

SHEET 1 of 1

Project No.: 22409 Project Name: 141 Banbury Road, Brantford Location: 141 Banbury Road, Brantford, Ontario	Drill Date: 2022-11-11 Drilling Method: Solid Stem Datum: Ground Surface	Northing: 43.188779 Easting: -80.236043 Ground Surface Elevation: 0
--	---	--

Depth Scale (m)	Stratigraphic Symbol	Depth/Elevation (m)	Subsurface Conditions Description	Samples				Penetration / Strength Results		Moisture / Plasticity		Well Details	Groundwater Conditions	Headspace Vapor (ppm) [LEL(%)]	Comments
				Number	Type	Blow Counts/50 mm	N Value	Undrained Shear Strength Values (kPa) ▲ 40 80 120 160 ▲	Penetration Test Values (Blows / 0.3m) × 20 40 60 80 ×	PL	MC				
			Organic Material												
			Clayey Silt trace iron staining, trace gravel. Brown, very stiff, moist.	1	SS	6 11 10 13	21				15.2				
1		-1.0	...no iron staining, no gravel. Dry.	2	SS	6 13 13	26				14.9				
2		-2.0	Silty Clay Brown, stiff, very moist.	3	SS	3 3 9	12				29.0				
3		-3.0	Clayey Silt Brown, very stiff, moist.	4	SS	5 6 11	17				22.3				
				5	SS	4 9 10	19				21.6				
4		-4.0													
5		-5.0	Silty Clay Grey, firm to stiff, very moist to wet.	6	SS	2 3 5	8				26.2				
5		-5.0	End of Log												
6		-6.0													



Additional Notes:
 1. Borehole open to approximately 4.5 m depth on completion.
 2. Groundwater or water seepage not encountered.
 3.
 4.

LANDTEK LIMITED

205 Nebo Road, Unit 4B
 Hamilton, Ontario, L8W 2E1
 Ph: (905) 383-3733

LOG OF BOREHOLE BH2

SHEET 1 of 1

Project No.: 22409	Drill Date: 2022-11-11	Northing: 43.18886
Project Name: 141 Banbury Road, Brantford	Drilling Method: Solid Stem	Easting: -80.236209
Location: 141 Banbury Road, Brantford, Ontario	Datum: Ground Surface	Ground Surface Elevation: 0

Depth Scale (m)	Stratigraphic Symbol	Subsurface Conditions		Samples				Penetration / Strength Results				Moisture / Plasticity		Well Details	Groundwater Conditions	Headspace Vapor (ppm) [LEL(%)]	Comments
		Depth/Elevation (m)	Description	Number	Type	Blow Counts/150 mm	N Value	Undrained Shear Strength Values (kPa)				Moisture / Plasticity					
								▲	40	80	120	160	▲				
			Fill Wood Chip material.														
			Clayey Silt trace iron staining. Brown, very stiff, moist.	1	SS	5 12 8 10	20						14.6				
1		-1.0	...no iron staining, no gravel. Dry.	2	SS	4 15 13	28						14.8				
2		-2.0	Silty Clay Brown, stiff to very stiff, moist.	3	SS	4 5 10	15						19.2				
3		-3.0	Clayey Silt Brown, very stiff, moist.	4	SS	6 8 12	20						21.7				
				5	SS	6 10 12	22						20.3				
4		-4.0															
5		-5.0	Silty Clay Grey, firm, moist.	6	SS	3 3 4	7						24.9				
6		-6.0	End of Log														



Additional Notes:

1. Borehole open to approximately 4.5 m depth on completion.
2. Groundwater or water seepage not encountered.
- 3.
- 4.

LANDTEK LIMITED

205 Nebo Road, Unit 4B
Hamilton, Ontario, L8W 2E1
Ph: (905) 383-3733

Arborist Report

Pre-Construction Assessment

Prepared For:

Walter Paolone

Site Address:

141 Banbury Road,
Brantford, ON
N3P 1E3

March 17, 2023

Revised March 21, 2023

Prepared By:



Zachariah Innis

Davey Resource Group

Phone: (639) 994-0771 | Zachariah.Innis@Davey.com

And

Jordan Barker

Davey Resource Group

ISA Certified Arborist (ON-2488A)

905-802-4969 | Jordan.Barker@davey.com

©2023 Davey Resource Group. All rights reserved. This document must be used in conjunction with the tree inventory lists, and Tree Preservation Plans with arborist comments (these plans are to be printed on correct size to ensure scalability). This document must be used in whole and with all pages.

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Summary

The following Arborist Report is with respect to the proposed school addition and parking lot expansion at, 141 Banbury Rd, Brantford. The intent of this report is to provide an assessment of impacts on trees located within and surrounding the property, in accordance with requirements for Tree Preservation Plan.

24 trees were assessed on site:

- Private trees: **18**
- Neighbor trees: **2**
- City trees: **4**

Eight (8) trees (#7, #8, #11-14, #20, and #23) are recommended to be removed. Trees were recommended to be removed if the planned construction would likely incur significant damage to the root system of the tree, or if they were dead or poor condition.

- Trees #7, 8, and 11-14 must be removed to accommodate the proposed construction.
- Trees #20 and #23 are dead/dying and are recommended to be removed, though they are not located near the proposed construction and will not be affected by it.

Five (5) trees have construction proposed within their drip lines and will likely be injured.

- For Trees #3, 4, 15-17, we recommend that a Certified Arborist supervise low-impact excavation (hand-dig, air-spade, or hydro-vac) at the limit of construction encroachment within tree drip lines, and prune roots where necessary. **A permit is required for the proposed injury to City-owned Tree #3.**
- Tree #16 can be retained so long as roots are retained beneath the new sidewalk and are incorporated into the base/fill layer. Reduce depth of base/fill layer or concrete to retain roots.

Eleven (11) trees can be preserved without injury.

- For Trees #1, 2, 5, 6, 9, and 10, we recommend that tree protection fencing be installed in the locations shown in the Tree Preservation Plan (Appendix 2).
- Trees #18, 19, 21, 22, and 24 can be retained without the use of tree protection fencing.
- No construction activity or material storage is to encroach these tree protection zones.

It is imperative for all crew contracted to perform this construction to thoroughly understand this report and the recommendations stated within.

Introduction

Davey Resource Group (DRG) was retained by the client, Walter Paolone to develop an Arborist Report and Tree Protection Plan (TPP) for the proposed school addition and parking lot expansion at, 141 Banbury Rd, Brantford.

An inventory and assessment of all the trees within the scope of the assignment was conducted. The Arborist was to document the current condition, size, and location of the trees as they relate to the proposed work. To account for the spatial scope of work within the site, the location of the planned construction and all trees within 6 meters of it were surveyed. Trees ≥ 5 cm DBH on the subject property and trees on neighboring properties within the scope of the survey were included in an inventory and assessed for protection or removal needs. Small ornamental trees and shrubs were not surveyed for this report. Recommendations for tree preservation or removal are to be provided.

This report must be accompanied by the following additional documents:

1. A full printing of the tree inventory performed by Davey Resource Group (DRG), otherwise known as the Tree Protection Action Key (TPAK). (Appendix 1)
2. The construction maps with the Arborist Comments, otherwise known as the Tree Protection Plan (TPP). (Appendix 2)

Limitations of the Assignment

It must be understood that DRG is the assessor of the trees in relation to tree preservation practices. The construction supervisors should incorporate the information and recommendations provided within this report into their construction methodology to complete their project in a reasonable manner.

This Arborist Report is based on the project scope and details for tree preservation as discussed. All proposed construction methods are limited to what was provided in the site plans and in discussions with the Project Leader. Estimates, measurements and comments regarding tree preservation were based on the proposed construction plans and field observations.

This Arborist Report was compiled from field data collected from the ground. A basic visual assessment of the tree was performed. No level of ISA Tree Risk Assessment was performed. More data on risk may be obtained through a basic or advanced ISA Tree Risk Assessment.

Methods

- Tools used to assess the trees included a metric DBH measuring tape and a phone camera.
- Trees ≥ 5 cm DBH on the subject property and within 6 meters of planned construction work were included in the inventory.
- Trees were studied for their proximity to existing and planned structures to determine recommendations or precautions for trees requiring removal or injury.
- Tree Protection Zones were plotted on the Tree Protection Plan as existing drip lines indicated by red circles. The measurements shown are the appr radius of the drip lines.

Observations

- The site was inspected on March 7th, 2023, by Arborist Jordan Barker (ISA ON-2488A)
- During the assessment, no evidence of construction was present, and work had not yet started. No injuries to any trees, nor any construction material storage or soil compaction within Tree Protection Zones was noted during the assessment.
- **24** trees were assessed for this report and labeled #1-24 in the Tree Protection Action Key (TPAK) and Tree Protection Plan (TPP) included within Appendices 1-2.
- **21** trees were in good condition.
- **1** tree was in poor condition.
- **2** trees were dead condition.
- Tree #1, #2, and #18-#24 are all located away from the proposed construction and should not be injured or affected by the proposed construction.
- Trees #3-#6, #9-#10, and #15-#17 are located on the South and West side of the property and are recommended to be protected with Tree Protection Fencing (TPF).
- Trees #7, #8, and #11-14 are located on the South side of the property where the proposed extension is to be built and are recommended to be removed.

For further details and observations, refer to the Tree Protection Action Key (Appendix 1).

Discussion

To preserve and protect trees, proper recommendations must be followed and abided by the client for the duration of the project.

Tree Protection Zones

Tree Protection Zones (TPZ) surrounding each tree are defined by the tree's drip line and must be kept free of all construction activity above and below ground. If work is proposed within 6 meters of a tree but not within its TPZ, it is in the best interest of the client to protect it using a Tree Protection Fence built to city standards. This serves to prevent any incidental contact or harm to a protected tree that would constitute a contravention of a by-law and may result in fines or a stop-work order.

Tree Protection Fencing (Appendix 3)

It is in the best interest of the client to take every precaution possible to minimize damage to trees where work is taking place, and to avoid any unnecessary injury to trees outside of work areas. On this construction site, Tree Protection Fencing (TPF) is recommended to protect trees from soil compaction and root cutting. TPF should be placed a minimum of one meter from the drip line/TPZ of a tree. However, it must be understood that sometimes this distance is not achievable due to infrastructure being too close. In most situations, TPF does not need to be installed beyond the closest extent of impermeable and/or paved surfaces. It must be further understood the TPF distance sometimes must accommodate a larger TPZ (than the typical MTPZ distance) due to a limited root growing area/volume (this area is typically defined by the project arborist). These distances may be achieved across softscapes and hardscapes surrounding all trees, protecting their Tree Protection Zones.

Root Pruning

Similar to pruning the upper canopy of the tree, roots are best removed (if needed) via target pruning practices and not by being torn off. Using mechanical tools or excavation equipment to remove or prune roots often leaves ragged edges, stripped bark, or splintered tissue. These surfaces are difficult for a tree to heal over and provide a high surface area for potential decay pathogens (bacteria, fungus, insects), to enter a tree. Minimizing the cross section of pruned roots allows for the most efficient recovery for the tree. Roots that are larger in diameter than 20% of its parent trunk's DBH are structurally integral to a tree and must be pruned with discretion. Root pruning is recommended to be carried out by a licensed professional, such as an ISA Certified Arborist. Cut roots should be backfilled and watered before they have a chance to dry out.

Tree Protection Signage

It is recommended for the client to affix Tree Protection Signs to Tree Protection Fencing. A sign should be posted on the fence to indicate that it delineates a Tree Protection Zone. The signage should remain in place and in good repair throughout construction. An example standard sign format is displayed in Appendix 4 within this report.

Staging Areas

All staging areas are understood to be outside the TPZ. At no time are materials, vehicles, traffic or debris to be stacked, staged, or piled inside the Tree Protection Fencing.

Conclusion

To account for the proposed construction at 141 Banbury Rd, we assessed **24 trees** for retention, protection, injury, or removal. A detailed summary table is provided as the Tree Protection Action Key (Appendix 1).

Eight (8) trees (#7, #8, #11-14, #20, and #23) are recommended to be removed. Trees were recommended to be removed if the planned construction would likely incur significant damage to the root system of the tree, or if they were dead or poor condition.

- Trees #7, 8, and 11-14 must be removed to accommodate the proposed construction.
- Trees #20 and #23 are dead/dying and are recommended to be removed, though they are not located near the proposed construction and will not be affected by it.

Five (5) trees have construction proposed within their drip lines and will likely be injured.

- For Trees #3, 4, 15-17, we recommend that a Certified Arborist supervise low-impact excavation (hand-dig, air-spade, or hydro-vac) at the limit of construction encroachment within tree drip lines, and prune roots where necessary. **A permit is required for the proposed injury to City-owned Tree #3.**
- Tree #16 can be retained so long as roots are retained beneath the new sidewalk and are incorporated into the base/fill layer. Reduce depth of base/fill layer or concrete to retain roots.

Eleven (11) trees can be preserved without injury.

- For Trees #1, 2, 5, 6, 9, and 10, we recommend that tree protection fencing be installed in the locations shown in the Tree Preservation Plan (Appendix 2).
- Trees #18, 19, 21, 22, and 24 can be retained without the use of tree protection fencing.
- No construction activity or material storage is to encroach these tree protection zones.

Tree protection fencing and signage is to be built to City of Brantford specifications.

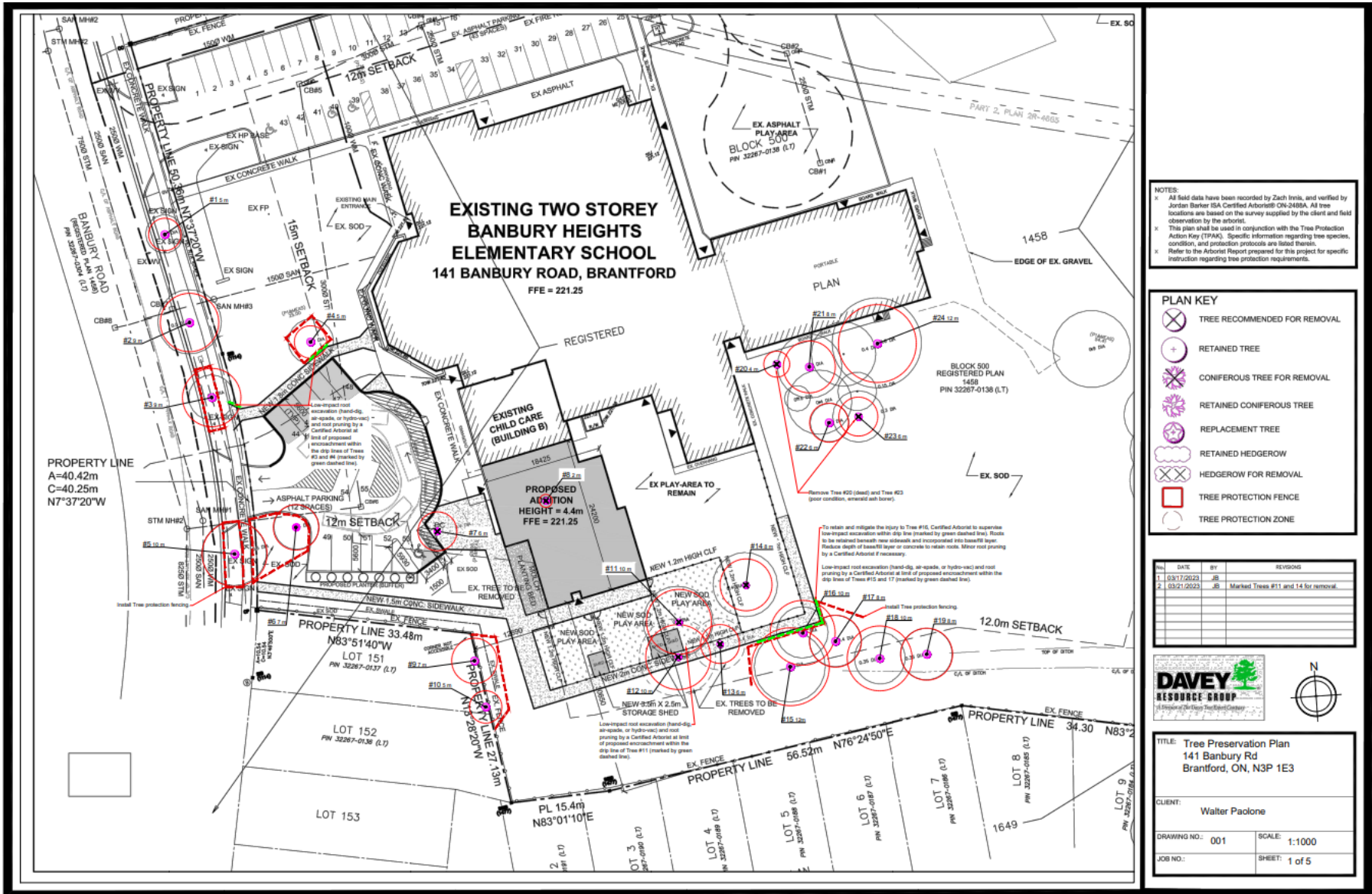
Appendix 1 – Tree Protection Action Key (TPAK)

Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Drip Line / Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Construction Impact (None, Low, Medium, High)	Action	Recommendations	Notes and Observations
1	Silver Maple	<i>Acer saccharinum</i>	29	City	5.0	G	G	G	7	5	5	N	None	Preserve	Protect with tree protection fencing	
2	Silver Maple	<i>Acer saccharinum</i>	45	City	9.0	G	G	G	11	9	5	N	None	Preserve	Protect with tree protection fencing	
3	Silver Maple	<i>Acer saccharinum</i>	41	City	9.0	G	G	G	10	9	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
4	Norway Maple	<i>Acer platanoides</i>	22	Private	5.0	G	G	G	6	5	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
5	Silver Maple	<i>Acer saccharinum</i>	53	City	10.0	G	G	G	11	10	5	N	None	Preserve	Protect with tree protection fencing	
6	Austrian Pine	<i>Pinus nigra</i>	41	Private	7.0	G	G	G	7	7	2	N	None	Preserve	Protect with tree protection fencing	
7	Austrian Pine	<i>Pinus nigra</i>	34	Private	6.0	G	G	G	5	6	2	Y	High	Remove	Remove tree to accommodate construction.	New curb and ramp proposed in location of tree.
8	Unknown	<i>Unknown</i>	14	Private	2.0	D	D	D	4	2	100	Y	High	Remove	Remove dead tree.	Dead tree.
9	Norway Maple	<i>Acer platanoides</i>	25	Neighbour	7.0	G	G	G	9	7	5	N	None	Preserve	Protect with tree protection fencing	Estimated DBH; Neighbour tree touching fence
10	Silver Maple	<i>Acer saccharinum</i>	15	Neighbour	5.0	G	F	G	8	5	5	N	None	Preserve	Protect with tree protection fencing	Estimated DBH : 12, 8, 6 cm; Neighbour tree touching fence

Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Drip Line / Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Construction Impact (None, Low, Medium, High)	Action	Recommendations	Notes and Observations
11	Silver Maple	<i>Acer saccharinum</i>	47	Private	10.0	G	G	G	18	10	5	Y	Medium	Remove	Remove tree to accommodate construction.	New sidewalk, shed, and chain link fence proposed within drip line.
12	Silver Maple	<i>Acer saccharinum</i>	64	Private	10.0	G	G	G	18	10	5	Y	High	Remove	Remove tree to accommodate construction.	New sidewalk proposed in location of tree.
13	Silver Maple	<i>Acer saccharinum</i>	41	Private	6.0	G	G	G	18	6	5	Y	High	Remove	Remove tree to accommodate construction.	New sidewalk proposed in location of tree.
14	Silver Maple	<i>Acer saccharinum</i>	39	Private	8.0	G	G	G	16	8	5	Y	Low	Remove	Remove tree to accommodate construction.	New chain link fence proposed within drip line.
15	Silver Maple	<i>Acer saccharinum</i>	54	Private	12.0	G	G	G	18	12	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
16	Silver Maple	<i>Acer saccharinum</i>	34	Private	10.0	G	G	G	18	10	5	Y	Medium	Injure	Certified Arborist to supervise low-impact excavation within drip line (marked by green dashed line). Roots to be retained beneath new sidewalk and incorporated into base/fill layer. Reduce depth of base/fill layer or concrete to retain roots. Minor root pruning by a Certified Arborist if necessary.	New sidewalk proposed within drip line.
17	Silver Maple	<i>Acer saccharinum</i>	35	Private	8.0	G	G	G	18	8	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
18	Silver Maple	<i>Acer saccharinum</i>	42	Private	10.0	G	G	G	17	10	5	N	None	Preserve	Retain tree without tree protection fencing.	
19	Silver Maple	<i>Acer saccharinum</i>	38	Private	8.0	G	G	G	17	8	5	N	None	Preserve	Retain tree without tree protection fencing.	

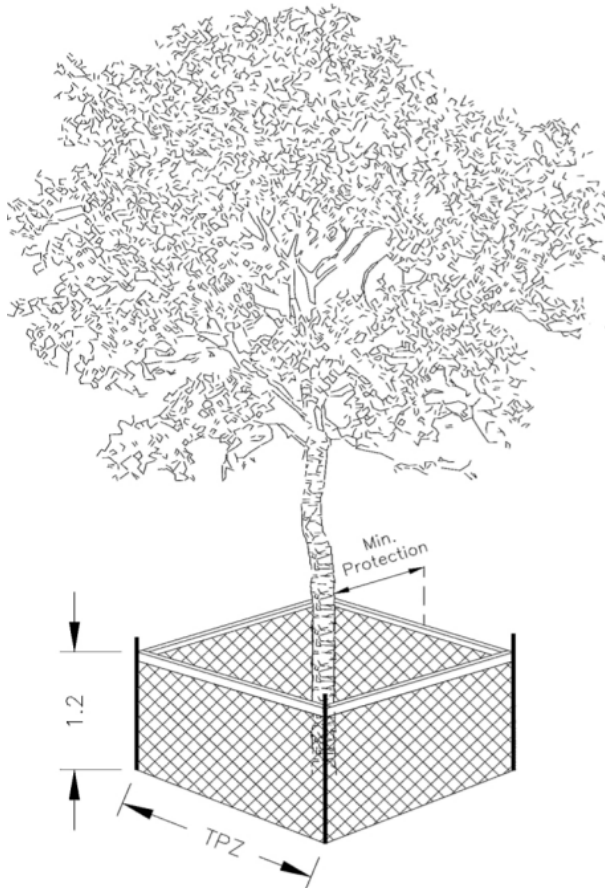
Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Drip Line / Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Construction Impact (None, Low, Medium, High)	Action	Recommendations	Notes and Observations
20	Ash	<i>Fraxinus species</i>	24	Private	4.0	D	D	D	11	4	100	N	None	Remove	Remove dead tree.	Dead
21	Silver Maple	<i>Acer saccharinum</i>	39	Private	8.0	G	G	G	18	8	5	N	None	Preserve	Retain tree without tree protection fencing.	
22	Honey Locust	<i>Gleditsia triacanthos</i>	23	Private	6.0	G	G	G	10	6	5	N	None	Preserve	Retain tree without tree protection fencing.	
23	Ash	<i>Fraxinus species</i>	48	Private	6.0	P	F	P	12	6	50	N	None	Remove	Remove poor condition tree.	Emerald Ash Borer, Basal Wound
24	Silver Maple	<i>Acer saccharinum</i>	53	Private	12.0	G	G	G	18	12	5	N	None	Preserve	Retain tree without tree protection fencing.	

Appendix 2 – Tree Preservation Plan (preview only – to be printed to scale)



Appendix 3 – Tree Protection Fencing and Sign (Example)

Tree Protection and Preservation Specification No.: SS12A



Detail TP-1 – Tree Protection Detail.

Trunk Diameter (DBH) ²	Minimum Tree Protection Zone (MTPZ) Distances Required ³	Critical Root Zone (CRZ) Distances Required ^{3&4}
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

NOTES:

¹ The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.

² Diameter at breast height (DBH) is the measurement of tree trunk taken at 1.4 metres above ground.

³ Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.

⁴ Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

TREE PROTECTION BARRIER

1. The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2" x 4" frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
2. Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may be not be removed prior to the completion of construction without written authorization from the City Arborist.
3. All supports and bracing used to safely secure the barrier should be located outside the MTPZ. All supports and bracing should minimize damage to roots.
4. Where some fill or excavated material must be temporarily located near a MTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the MTPZ.
5. No materials or fill may be stored within the MTPZ.
6. Equipment or vehicles shall not be operated, parked, repaired, or refueled within the MTPZ.
7. No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the City Arborist.
8. A laminated Minimum Tree Protection Zone sign (See Detail TP-3 – Minimum Tree Protection Zone Sign) must be attached to the side of the Tree Protection where it will be visible by persons entering the site. Minimum size must be 10"x14".



Appendix 4 – References

1. ISA, 2001-2011. Best Management Practices, Books 1-9, Companion publications to ANSI A300 Standards for Tree Care
2. Dujesiefken, Dr. Dirk, 2012. Director of the Institute for Tree Care in Germany, The CODIT Principle, research presented on cambial regrowth on trees after injury at the Annual ISA Conference in Kingston Ontario
3. Sinclair and Lyon, 2005. Diseases of Trees and Shrubs, Second Edition
4. ISA, 2010. Glossary of Arboricultural Terms
5. Neely and Watson, ISA, 1994 and 1998. The Landscape Below Ground 1 and 2
6. Matheny and Clark, ISA, 1994. A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas, 2nd Edition
7. Matheny and Clark, ISA 1998. Trees and Development, A Technical Guide to Preservation of Tree During Land Development
8. PNW-ISA, 2011. Tree Risk Assessment in Rural Areas and Urban/Rural Interface, Version 1-5
9. Todd Hurt & Bob Westerfield, 2005. Tree Protection During Construction and Landscaping Activities

Appendix 5 – Glossary of Common Arboricultural Terms

Arborist	A professional who possesses the technical competence gained through experience and related training to provide for or supervise the management of trees and other woody plants in residential, commercial, and public landscapes.
ANSI A300	Acronym for American National Standards Institute. In the United States, industry-developed, national consensus standards of practice for tree care.
Bark Tracing	Cutting away torn or injured bark to leave a smooth edge.
Branch Bark Ridge	Raised strip of bark at the top of a branch union, where the growth and expansion of the trunk or parent stem and adjoining branch push the bark into a ridge.
Callus wood	Undifferentiated tissue formed by the cambium, usually as the result of wounding.
Clinometer	A device used to calculate the height of trees.
Consulting Arborist	An Arboricultural consultant is one of the following: <ul style="list-style-type: none"> American Society of Consulting Arborists, Registered Consulting Arborist (ASCA RCA#___) International Society of Arboriculture, Board Certified Master Arborist (ISA BCMA #___B) ISA Certified Arborist/Municipal Specialist in good standing for a minimum of 6 years with 6 years of proven experience in a management role related to arboriculture, and has attested and signed to a code of ethics related to arboriculture (ISA#_____)
Compartmentalization	Natural defense process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms
Critical Root Zone – (CRZ)	Area of soil around a tree where the minimum amounts of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of dbh (12:1, 12cm of ground distance from the trunk for every cm of dbh) but because root growth is often asymmetric due to site conditions, on-site investigation is preferred.
Daylighting	Also known as Hydro-vac, this is the process by which soil is vacuumed up. In the context of tree care this allows workers to access the soil below the roots without mortal damage to significant roots.
DBH	Acronym for tree diameter at breast height. Measured at 1.4m above ground.
Decurrent	Rounded or spreading growth habit of the tree crown.
Directional Pruning	Providing clearance by pruning branches that could significantly affect the integrity of utility facilities or other structures, and leaving in place branches that could have little or no effect.
Dripline	Imaginary line defined by the branch spread of a single parent or group of plants

Excurrent	Tree growth habit characterized by a central leader and a pyramidal crown.
Included bark	Bark that becomes embedded in a crotch (union) between branch and trunk or between codominant stems. Causes a weak structure.
Lion's Tailing	Poor pruning practice in which an excessive number of branches are thinned from the inside and lower part of specific limbs or a tree crown, leaving mostly terminal foliage. Results in poor branch taper, poor wind load distribution, and higher risk of branch failure.
MTPZ	Acronym for Minimum Tree Protection Zone, also known as the Structural Root Zone (SRZ), which is the distance from the tree equal to 6 times the dbh, within which the likelihood of encountering roots that are structural supports for the tree.
Moment	Rotational force that is created by any line force on a body. The magnitude of a moment is defined as the product of the force magnitude and perpendicular distance from the line of action of the force to the axis of which the moment is being calculated.
Mortality Spiral	A sequence of stressful events or conditions causing the decline and eventual death of a tree.
Mulch	Material that is spread or sometimes sprayed on the soil surface to reduce weed growth, to retain soil moisture and moderate temperature extremes, to reduce compaction from pedestrian traffic or to prevent damage from lawn-maintenance equipment, to reduce erosion or soil spattering onto adjacent surfaces, to improve soil quality through its eventual decomposition, and/or to improve aesthetic appearance of the landscape. Mulch can be composed of chipped, ground, or shredded organic material such as bark, wood, or recycled paper; unmodified organic material such as seed hulls; organic fiber blankets or mats; or inorganic material such as plastic sheeting.
Organic Matter	Material derived from the growth (and death) of living organisms. The organic components of the soil.
CRZ	Acronym for Critical Root Zone, also known as the Critical Root Zone (see definition above), within which there is a high likelihood of encountering roots that are necessary for the survival for the tree.
Project Arborist	The consulting arborist retained to provide all tree preservation recommendations to the project manager or contractors on a given construction project.
Qualified Arborist	An arborist who has documented related training (i.e. ISA, MTCU, or equivalent) and on-the-job experience (minimum of 5 years)
Radial trenching	Technique for aerating the soil or alleviating compaction around a tree by removing and replacing soil (which may be amended) in trenches (typically 300mm deep and 150mm wide) made in a spoke like pattern (radially from the trunk) in the root zone to

	improve conditions for root growth.
Reaction Wood	Wood formed in leaning or crooked stems or on lower or upper sides of branches as a means of counteracting the effects of gravity.
Removal Cut	A cut that removes a branch at its point of origin. Collar cut.
Reduction Cut	A pruning cut that reduces the length of a branch or stem back to a lateral branch large enough to assume apical dominance.
Resistograph®	A brand name of a device consisting of a specialized micro-drill bit that drills into trees and graphs density differences that are used to detect decay.
Soft-Scaped	Landscaping practices that do not involved solid or deeply-dug foundations. Patios consisting of slab rocks laid on-top of the soil with minimal excavation and base (less than 10cm) and causing minimal damage to existing tree roots.
Static Support System	Cabling system that utilizes rigid materials such as rods and steel cables to limit movement and provide constant support of limbs.
Structural cells	Modular system consisting of units of soil and integrated support structures that serve both as a foundation for paved surfaces and a hospitable environment for tree root growth,
Structural pruning	Pruning to establish a strong arrangement or system of scaffold branches.
Structural Soil™	Pavement substrate that can be compacted to meet engineering specifications yet remains penetrable be tree roots in the urban environment. Composed of angular crushed stone, clay loam, and hydrogel mixed in a weight ratio of 100:20:0.03. Developed at the Urban Horticulture Institute, Cornell University, Ithaca, NY.
Supersonic Air Excavation Techniques (SSAT)	A methodology using a device that directs a jet of highly compressed air to excavate soil. Used within the root zone of trees to avoid or minimizing damage to the roots, or near underground structures such as pipes and wires to avoid or minimize damage to them.
Tree Protection Zone (TPZ)	Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, especially during construction. TPZ is sometimes based on a minimum multiple of dbh (e.g. 6:1, 6cm of ground distance from the trunk for 1cm of dbh)
Walls	Trees have 4 walls in a process known as compartmentalization. <ul style="list-style-type: none"> ● Wall 1 prevents decay moving up and down in a tree ● Wall 2 prevents decay moving inward in a tree ● Wall 3 prevents decay moving laterally in a tree ● Wall 4 is the new growth formed on the outside of the tree, callus growth.
Woundwood	Lignified, differentiated tissues produced on woody plants after wounding.

Appendix 6 – Arborist Qualifications



Zachariah J. Innis is a Consulting Arborist with Davey Resource Group. His formal education includes a Diploma in Adventure Recreation and Parks Technician and a Diploma in Forestry Technician. Mr. Innis has three years of varied work experience in the forestry and arboriculture fields and is currently working towards his International Society of Arboriculture Certification (ISA) to further his career in the Arboriculture Consulting field.

Education

Adventure Recreation and Parks Technician Program 2017-2019
Forestry Technician - Conservation Program 2019-2020

Appendix 7 – Photographs



Figure 1 – Trees #1-4



Figure 2 – Trees #5 (right) and #6 (left)



Figure 3 – Trees #7



Figure 4 – Tree #9 (right) and #10 (left)



Figure 5 – Trees #11-17 from right to left.



Figure 6 – Trees #20-24.

Conditions of Assessment Agreement

This Conditions of Assessment Agreement is made pursuant to and as a provision of Davey Resource Group, a division of The Davey Tree Expert Co. of Canada, Limited (“Davey”), providing tree assessment services as agreed to between the parties, the terms and substance of which are incorporated in and made a part of this Agreement (collectively the “Services”).

Trees are living organisms that are subject to stress and conditions and which inherently impose some degree or level of risk. Unless a tree is removed, the risk cannot be eliminated entirely. Tree conditions may also change over time even if there is no external evidence or manifestation. In that Davey provides the Services at a point in time utilizing applicable standard industry practices, any conclusions and recommendations provided are relevant only to the facts and conditions at the time the Services are performed. Given that Davey cannot predict or otherwise determine subsequent developments, Davey will not be liable for any such developments, acts, or conditions that occur including, but not limited to, decay, deterioration, or damage from any cause, insect infestation, acts of god or nature or otherwise.

Unless otherwise stated in writing, assessments are performed visually from the ground on the above-ground portions of the tree(s). However, the outward appearance of trees may conceal defects. **Therefore, to the extent permitted by law, Davey does not make and expressly disclaims any warranties or representations of any kind, express or implied, with respect to completeness or accuracy of the information contained in the reports or findings resulting from the Services beyond that expressly contracted for by Davey in writing, including, but not limited to, performing diagnosis or identifying hazards or conditions not within the scope of the Services or not readily discoverable using the methods applied pursuant to applicable standard industry practices.** Further, Davey’s liability for any claim, damage or loss caused by or related to the Services shall be limited to the work expressly contracted for.

In performing the Services, Davey may have reviewed publicly available or other third- party records or conducted interviews and has assumed the genuineness of such documents and statements. Davey disclaims any liability for errors, omissions, or inaccuracies resulting from or contained in any information obtained from any third- party or publicly available source.

Except as agreed to between the parties prior to the Services being performed, the reports and recommendations resulting from the Services may not be used by any other party or for any other purpose. The undersigned also agrees, to the extent permitted by law, to protect, indemnify, defend and hold Davey harmless from and against any and all claims, demands, actions, rights and causes of action of every kind and nature, including actions for contribution or indemnity, that may hereafter at any time be asserted against Davey or another party, including, but not limited to, bodily injury or death or property damage arising in any manner from or in any way related to any disclaimers or limitations in this Agreement.

By accepting or using the Services, the customer will be deemed to have agreed to the terms of this Agreement, even if it is not signed.

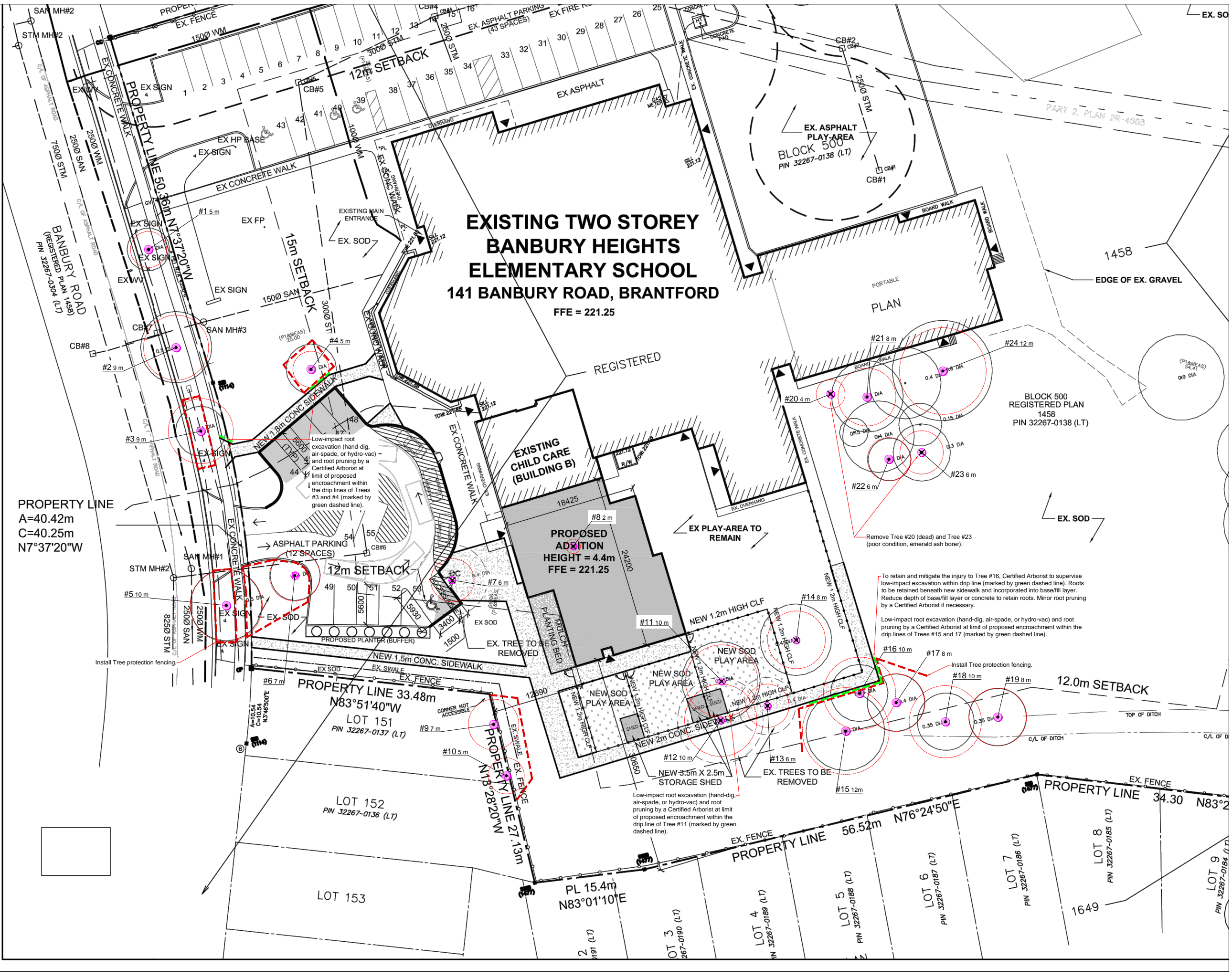
Acknowledged by:

Name of Customer: _____

Authorized Signature: _____

Date: _____

**EXISTING TWO STOREY
BANBURY HEIGHTS
ELEMENTARY SCHOOL**
141 BANBURY ROAD, BRANTFORD
FFE = 221.25

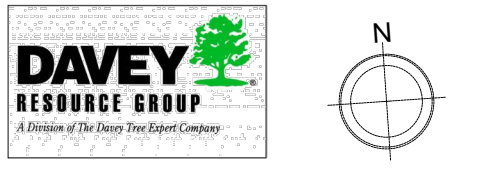


NOTES:
 x All field data have been recorded by Zach Innis, and verified by Jordan Barker ISA Certified Arborist® ON-2488A. All tree locations are based on the survey supplied by the client and field observation by the arborist.
 x This plan shall be used in conjunction with the Tree Protection Action Key (TPAK). Specific information regarding tree species, condition, and protection protocols are listed therein.
 x Refer to the Arborist Report prepared for this project for specific instruction regarding tree protection requirements.

PLAN KEY

- TREE RECOMMENDED FOR REMOVAL
- RETAINED TREE
- CONIFEROUS TREE FOR REMOVAL
- RETAINED CONIFEROUS TREE
- REPLACEMENT TREE
- RETAINED HEDGEROW
- HEDGEROW FOR REMOVAL
- TREE PROTECTION FENCE
- TREE PROTECTION ZONE

No.	DATE	BY	REVISIONS
1	03/17/2023	JB	
2	03/21/2023	JB	Marked Trees #11 and 14 for removal.

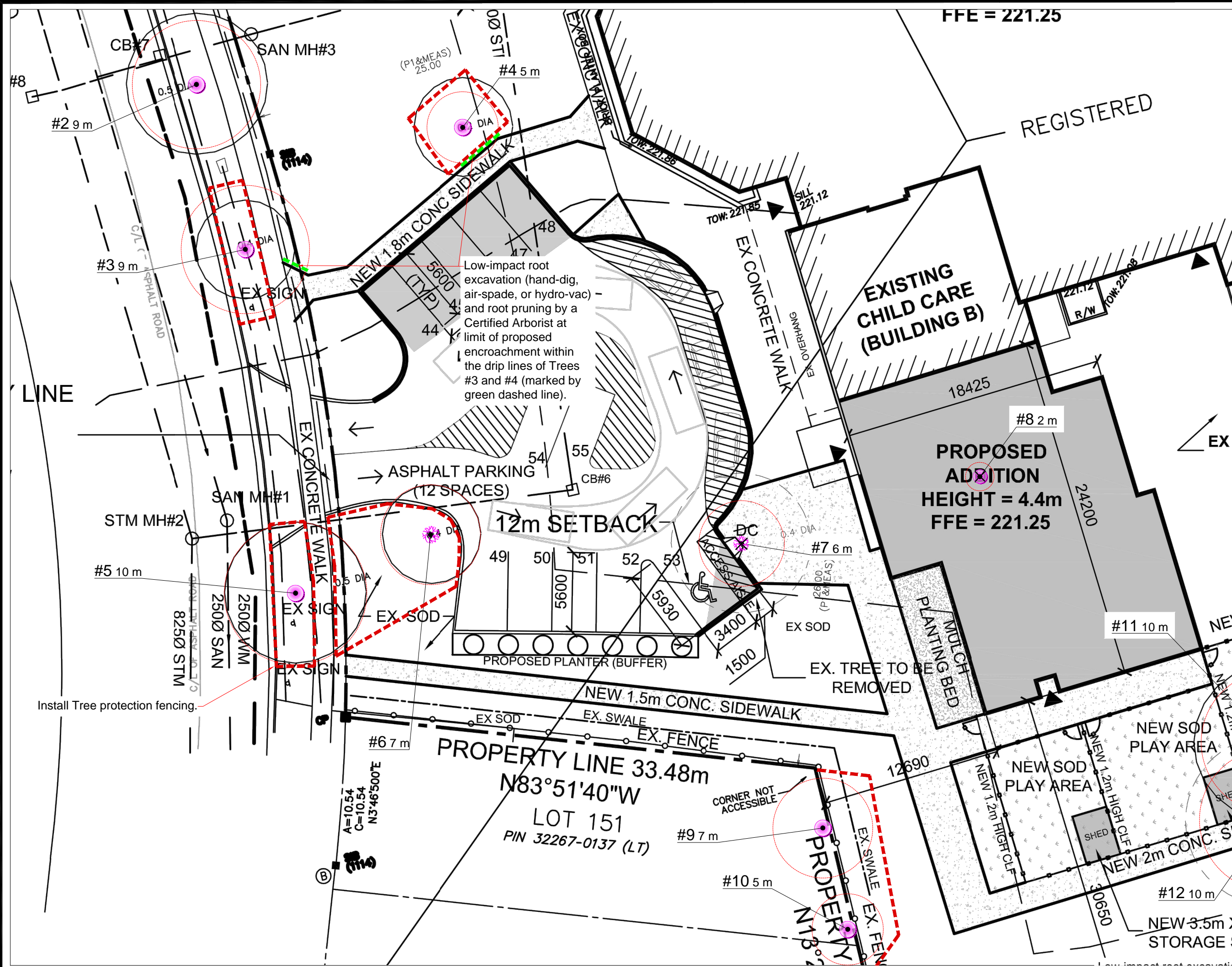


TITLE: Tree Preservation Plan
141 Banbury Rd
Brantford, ON, N3P 1E3

CLIENT: Walter Paolone

DRAWING NO.: 001 **SCALE:** 1:1000

JOB NO.: **SHEET:** 1 of 5



FFE = 221.25

REGISTERED

EXISTING CHILD CARE (BUILDING B)

PROPOSED ADDITION HEIGHT = 4.4m FFE = 221.25

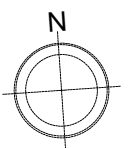
PROPERTY LINE 33.48m
N83°51'40"W
LOT 151
PIN 32267-0137 (LT)

NOTES:
 x All field data have been recorded by Zach Innis, and verified by Jordan Barker ISA Certified Arborist® ON-2488A. All tree locations are based on the survey supplied by the client and field observation by the arborist.
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 x Refer to the Arborist Report prepared for this project for specific instruction regarding tree protection requirements.

PLAN KEY

- TREE RECOMMENDED FOR REMOVAL
- RETAINED TREE
- CONIFEROUS TREE FOR REMOVAL
- RETAINED CONIFEROUS TREE
- REPLACEMENT TREE
- RETAINED HEDGEROW
- HEDGEROW FOR REMOVAL
- TREE PROTECTION FENCE
- TREE PROTECTION ZONE

No.	DATE	BY	REVISIONS
1	03/17/2023	JB	
2	03/21/2023	JB	Marked Trees #11 and 14 for removal.



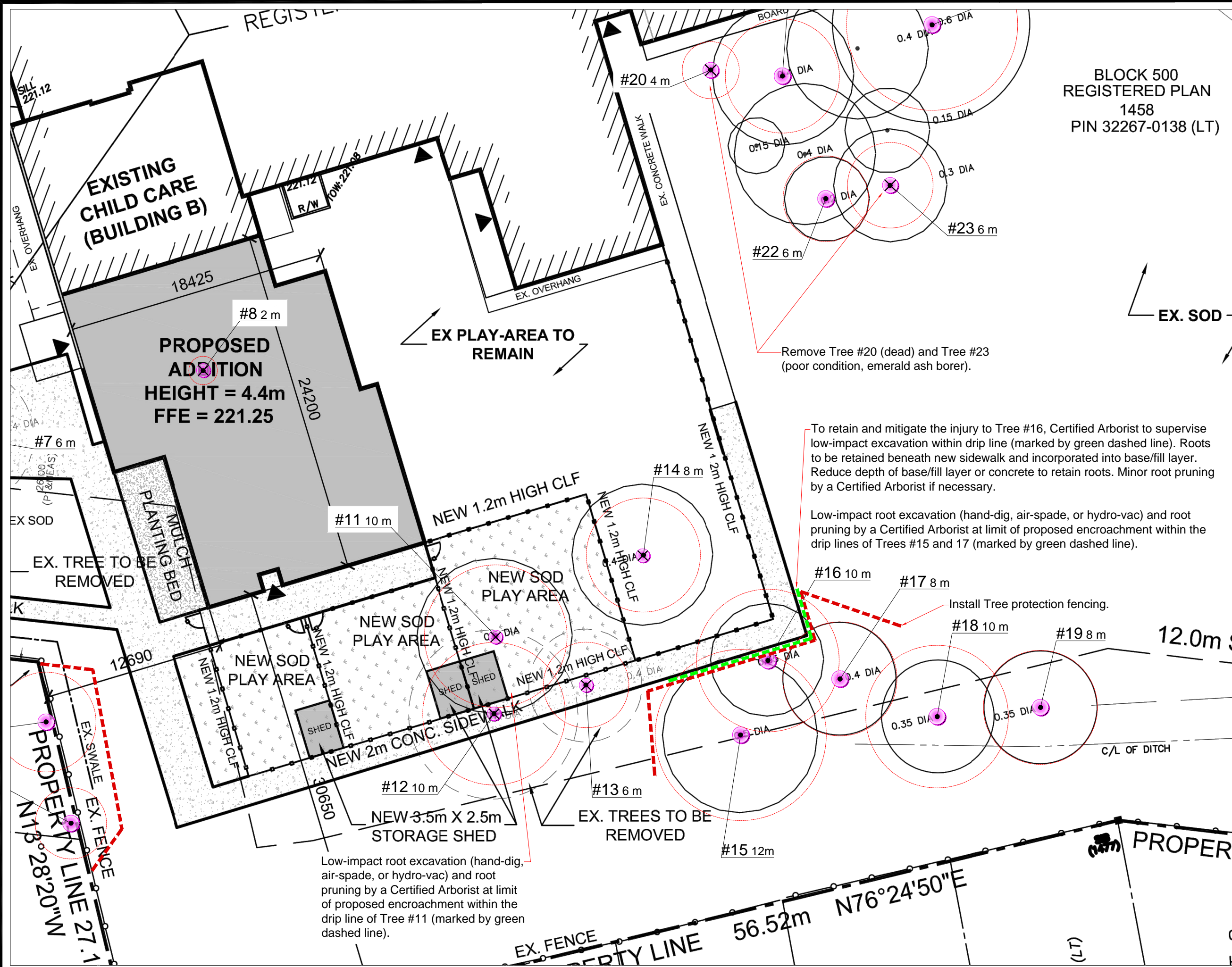
TITLE: Tree Preservation Plan
141 Banbury Rd
Brantford, ON, N3P 1E3

CLIENT: Walter Paolone

DRAWING NO.: 001 SCALE: 1:500

JOB NO.: SHEET: 2 of 5

BLOCK 500
REGISTERED PLAN
1458
PIN 32267-0138 (LT)



NOTES:
 x All field data have been recorded by Zach Innis, and verified by Jordan Barker ISA Certified Arborist® ON-2488A. All tree locations are based on the survey supplied by the client and field observation by the arborist.
 x This plan shall be used in conjunction with the Tree Protection Action Key (TPAK). Specific information regarding tree species, condition, and protection protocols are listed therein.
 x Refer to the Arborist Report prepared for this project for specific instruction regarding tree protection requirements.

PLAN KEY

- TREE RECOMMENDED FOR REMOVAL
- RETAINED TREE
- CONIFEROUS TREE FOR REMOVAL
- RETAINED CONIFEROUS TREE
- REPLACEMENT TREE
- RETAINED HEDGEROW
- HEDGEROW FOR REMOVAL
- TREE PROTECTION FENCE
- TREE PROTECTION ZONE

Remove Tree #20 (dead) and Tree #23 (poor condition, emerald ash borer).

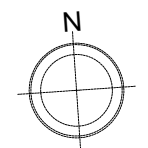
To retain and mitigate the injury to Tree #16, Certified Arborist to supervise low-impact excavation within drip line (marked by green dashed line). Roots to be retained beneath new sidewalk and incorporated into base/fill layer. Reduce depth of base/fill layer or concrete to retain roots. Minor root pruning by a Certified Arborist if necessary.

Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist at limit of proposed encroachment within the drip lines of Trees #15 and 17 (marked by green dashed line).

Install Tree protection fencing.

Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist at limit of proposed encroachment within the drip line of Tree #11 (marked by green dashed line).

No.	DATE	BY	REVISIONS
1	03/17/2023	JB	
2	03/21/2023	JB	Marked Trees #11 and 14 for removal.



TITLE: Tree Preservation Plan
141 Banbury Rd
Brantford, ON, N3P 1E3










CLIENT: Walter Paolone

DRAWING NO.: 001	SCALE: 1:500
JOB NO.:	SHEET: 3 of 5

Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Drip Line / Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Construction Impact (None, Low, Medium, High)	Action	Recommendations	Notes and Observations
1	Silver Maple	<i>Acer saccharinum</i>	29	City	5.0	G	G	G	7	5	5	N	None	Preserve	Protect with tree protection fencing	
2	Silver Maple	<i>Acer saccharinum</i>	45	City	9.0	G	G	G	11	9	5	N	None	Preserve	Protect with tree protection fencing	
3	Silver Maple	<i>Acer saccharinum</i>	41	City	9.0	G	G	G	10	9	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
4	Norway Maple	<i>Acer platanoides</i>	22	Private	5.0	G	G	G	6	5	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
5	Silver Maple	<i>Acer saccharinum</i>	53	City	10.0	G	G	G	11	10	5	N	None	Preserve	Protect with tree protection fencing	
6	Austrian Pine	<i>Pinus nigra</i>	41	Private	7.0	G	G	G	7	7	2	N	None	Preserve	Protect with tree protection fencing	
7	Austrian Pine	<i>Pinus nigra</i>	34	Private	6.0	G	G	G	5	6	2	Y	High	Remove	Remove tree to accommodate construction.	New curb and ramp proposed in location of tree.
8	Unknown	<i>Unknown</i>	14	Private	2.0	D	D	D	4	2	100	Y	High	Remove	Remove dead tree.	Dead tree.
9	Norway Maple	<i>Acer platanoides</i>	25	Neighbour	7.0	G	G	G	9	7	5	N	None	Preserve	Protect with tree protection fencing	Estimated DBH; Neighbour tree touching fence
10	Silver Maple	<i>Acer saccharinum</i>	15	Neighbour	5.0	G	F	G	8	5	5	N	None	Preserve	Protect with tree protection fencing	Estimated DBH: 12, 8, 6 cm; Neighbour tree touching fence
11	Silver Maple	<i>Acer saccharinum</i>	47	Private	10.0	G	G	G	18	10	5	Y	Medium	Remove	Remove tree to accommodate construction.	New sidewalk, shed, and chain link fence proposed within drip line.
12	Silver Maple	<i>Acer saccharinum</i>	64	Private	10.0	G	G	G	18	10	5	Y	High	Remove	Remove tree to accommodate construction.	New sidewalk proposed in location of tree.
13	Silver Maple	<i>Acer saccharinum</i>	41	Private	6.0	G	G	G	18	6	5	Y	High	Remove	Remove tree to accommodate construction.	New sidewalk proposed in location of tree.
14	Silver Maple	<i>Acer saccharinum</i>	39	Private	8.0	G	G	G	16	8	5	Y	Low	Remove	Remove tree to accommodate construction.	New chain link fence proposed within drip line.
15	Silver Maple	<i>Acer saccharinum</i>	54	Private	12.0	G	G	G	18	12	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
16	Silver Maple	<i>Acer saccharinum</i>	34	Private	10.0	G	G	G	18	10	5	Y	Medium	Injure	Certified Arborist to supervise low-impact excavation within drip line (marked by green dashed line). Roots to be retained beneath new sidewalk and incorporated into base/fill layer. Reduce depth of base/fill layer or concrete to retain roots. Minor root pruning by a Certified Arborist if necessary.	New sidewalk proposed within drip line.
17	Silver Maple	<i>Acer saccharinum</i>	35	Private	8.0	G	G	G	18	8	5	Y	Low	Injure	Low-impact root excavation (hand-dig, air-spade, or hydro-vac) and root pruning by a Certified Arborist.	New sidewalk proposed within drip line.
18	Silver Maple	<i>Acer saccharinum</i>	42	Private	10.0	G	G	G	17	10	5	N	None	Preserve	Retain tree without tree protection fencing.	
19	Silver Maple	<i>Acer saccharinum</i>	38	Private	8.0	G	G	G	17	8	5	N	None	Preserve	Retain tree without tree protection fencing.	
20	Ash	<i>Fraxinus species</i>	24	Private	4.0	D	D	D	11	4	100	N	None	Remove	Remove dead tree.	Dead
21	Silver Maple	<i>Acer saccharinum</i>	39	Private	8.0	G	G	G	18	8	5	N	None	Preserve	Retain tree without tree protection fencing.	
22	Honey Locust	<i>Gleditsia triacanthos</i>	23	Private	6.0	G	G	G	10	6	5	N	None	Preserve	Retain tree without tree protection fencing.	
23	Ash	<i>Fraxinus species</i>	48	Private	6.0	P	F	P	12	6	50	N	None	Remove	Remove poor condition tree.	Emerald Ash Borer, Basal Wound
24	Silver Maple	<i>Acer saccharinum</i>	53	Private	12.0	G	G	G	18	12	5	N	None	Preserve	Retain tree without tree protection fencing.	

NOTES:
 x All field data have been recorded by Zach Innis, and verified by Jordan Barker ISA Certified Arborist® ON-2488A. All tree locations are based on the survey supplied by the client and field observation by the arborist.
 x This plan shall be used in conjunction with the Tree Protection Action Key (TPAK). Specific information regarding tree species, condition, and protection protocols are listed therein.
 x Refer to the Arborist Report prepared for this project for specific instruction regarding tree protection requirements.

PLAN KEY

-  TREE RECOMMENDED FOR REMOVAL
-  RETAINED TREE
-  CONIFEROUS TREE FOR REMOVAL
-  RETAINED CONIFEROUS TREE
-  REPLACEMENT TREE
-  RETAINED HEDGEROW
-  HEDGEROW FOR REMOVAL
-  TREE PROTECTION FENCE
-  TREE PROTECTION ZONE

No.	DATE	BY	REVISIONS
1	03/17/2023	JB	
2	03/21/2023	JB	Marked Trees #11 and 14 for removal.



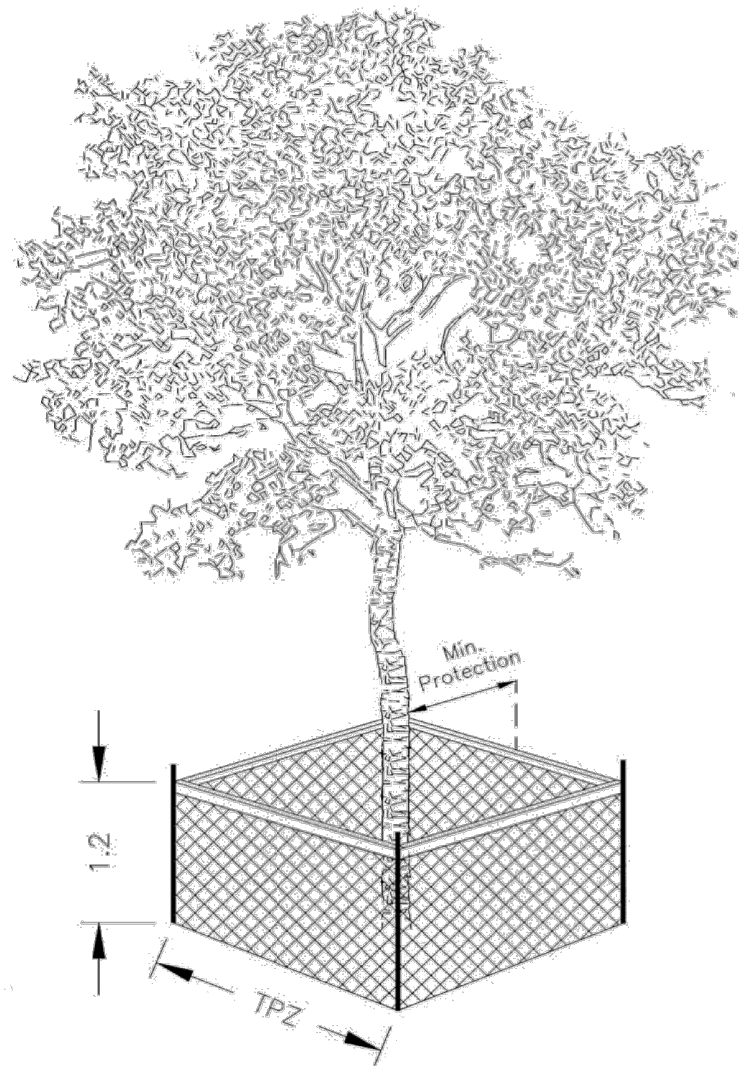
TITLE: Tree Preservation Plan
 141 Banbury Rd
 Brantford, ON, N3P 1E3

CLIENT: Walter Paolone

DRAWING NO.: SCALE:
 JOB NO.: SHEET: 4 of 5

**Tree Protection and Preservation
Specification No.: SS12A**

Detail TP-1 – Tree Protection Detail.



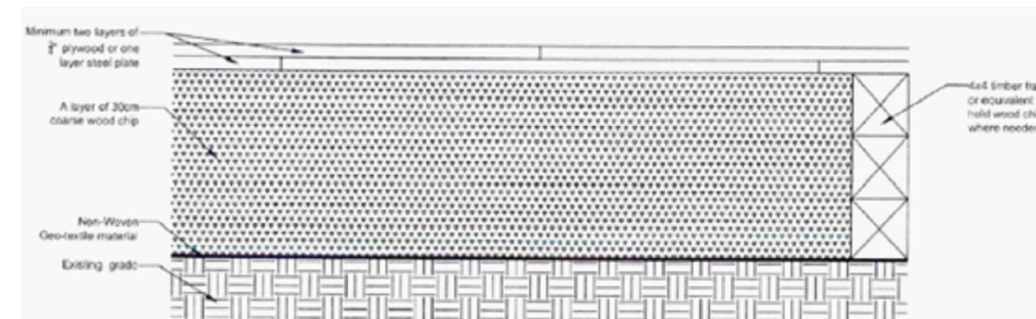
Trunk Diameter (DBH) ²	Minimum Tree Protection Zone (MTPZ) Distances Required ³	Critical Root Zone (CRZ) Distances Required ^{3&4}
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

NOTES:

- ¹ The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.
- ² Diameter at breast height (DBH) is the measurement of tree trunk taken at 1.4 metres above ground.
- ³ Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.
- ⁴ Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

TREE PROTECTION BARRIER

1. The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2" x 4" frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
2. Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may not be removed prior to the completion of construction without written authorization from the City Arborist.
3. All supports and bracing used to safely secure the barrier should be located outside the MTPZ. All supports and bracing should minimize damage to roots.
4. Where some fill or excavated material must be temporarily located near a MTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the MTPZ.
5. No materials or fill may be stored within the MTPZ.
6. Equipment or vehicles shall not be operated, parked, repaired, or refueled within the MTPZ.
7. No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the City Arborist.
8. A laminated Minimum Tree Protection Zone sign (See Detail TP-3 – Minimum Tree Protection Zone Sign) must be attached to the side of the Tree Protection where it will be visible by persons entering the site. Minimum size must be 10"x14".



Horizontal Tree Protection (Wood Chip)

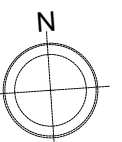
NOTES:

- x All field data have been recorded by Zach Innis, and verified by Jordan Barker ISA Certified Arborist® ON-2488A. All tree locations are based on the survey supplied by the client and field observation by the arborist.
- x This plan shall be used in conjunction with the Tree Protection Action Key (TPAK). Specific information regarding tree species, condition, and protection protocols are listed therein.
- x Refer to the Arborist Report prepared for this project for specific instruction regarding tree protection requirements.

PLAN KEY

- TREE RECOMMENDED FOR REMOVAL
- RETAINED TREE
- CONIFEROUS TREE FOR REMOVAL
- RETAINED CONIFEROUS TREE
- REPLACEMENT TREE
- RETAINED HEDGEROW
- HEDGEROW FOR REMOVAL
- TREE PROTECTION FENCE
- TREE PROTECTION ZONE

No.	DATE	BY	REVISIONS
1	03/17/2023	JB	
2	03/21/2023	JB	Marked Trees #11 and 14 for removal.



TITLE: Tree Preservation Plan
141 Banbury Rd
Brantford, ON, N3P 1E3

CLIENT: Walter Paolone

DRAWING NO.: **SCALE:**
JOB NO.: **SHEET:** 5 of 5

1. Definitions

1. The following Section of this Specification are of the abbreviated type and include incomplete sentences. Definite and indefinite articles have often been omitted and sentences are written in the form of direct instructions to the Contractor without using the phrase 'the Contractor shall.' Standard specifications and other quality references inserted govern materials and workmanship without using phrases 'conform with,' 'conformity therewith,' etc. Omitted words and phrases to be supplied in the same manner as they are when a note appears on the Drawings.
2. The Specifications are separated into Sections for reference convenience only. Such separation must in no instance make Owner or his Consultants arbiter to establish subcontract limits between Contractor and Subcontractor.
3. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on Drawings and/or in Specifications, including all labour, materials, equipment, tools, services, and incidentals necessary and required to complete the work. Responsibility for breakdown into and extension of subcontracts, including co-ordination of same, rests entirely with the Contractor.
4. Standard Specifications referred to are editions in force at Tender Closing Date.

2. Terminology

1. Consultants are the team of Architects, Engineers and other experts commissioned by the Owner, directly or indirectly, to execute design, contract documents and supervision for the project, including any of their agents or employees.
2. Prime Consultant is the Architect.
3. Contractor is the Firm or Corporation who, having signed the Agreement, has the sole legal responsibility to carry out the work shown or described in the Contract Documents for the Owner, whether contractually assigned to a Subcontractor or supplier, or not.

3. Minimum Standards

1. Unless otherwise specified, work and material to conform or exceed the minimum standards set out in the editions of the Canadian Government Specification Board, Canadian Standards Associations, the Ontario Building Code, Underwriters' Laboratories of Canada, the Canadian Electrical Code, the Local Building Code in force, whichever is applicable.
2. Copies of Standard Specifications referred to in this Specification to be kept on the site.
3. The use of the name (or its abbreviation) of any of the following bodies, accompanied by the reference number of a specification of that body to mean that the entire specification of the body to apply as noted:

AISC: American Institute of Steel Construction;
ASTM: American Society for Testing Materials;
CEC: Canadian Electric Code;
CGSB: Canadian Government Specification Board;
CISC: Canadian Institute of Steel Construction;
CRCA: Canadian Roofing Contractors' Association;
CSA: Canadian Standards Association;
OBC: Ontario Building Code;
ULC: Underwriters' Laboratories of Canada;
CLA: Canadian Lumbermen's Association;
OIRCA: Certification for Roofing Contractors.

4. Cooperation

1. Each trade to co-operate with the trades of adjacent or affected work. Supply in good time requirements effecting adjacent and underlying work in writing and items to be set or built in. Similarly, heed requirements and build-in items provided by other trades.
2. Take necessary precautions to protect work of other trades from contamination, marring or other damage due to application or installation processes, methods and activities.
3. General Contractor and each trade to co-operate with Contractors which may be assigned or selected by the Owner to perform work under Cash Allowances. Owner reserves the right to assign non-unionized labour to perform work under Cash Allowances, at Owners discretion.

5. Coordination

1. Co-ordinate the work of all trades in such a manner that each trade co-operates with the trade of adjacent work.
2. Organize weekly job site meetings and send out notices stating time and place to Consultants, subcontractors, Suppliers and all others whose presence is required at the meetings.
3. Take note of all persons attending these meetings and submit to Consultants and Owner, Minutes of these Meetings showing any major decisions made and instructions or information required.
4. Co-ordinate the Work in this Contract with the work of others awarded work under Cash Allowances.

6. Building Dimensions and Co-ordination

1. Ensure that all necessary job dimensions are taken and all trades are coordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of such dimensions, and for co-ordination.

2. Verify that all work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by requirements of the drawings, and ensure that work installed in error is rectified before construction resumes.
3. Check and verify all dimensions referring to the work and the interfacing of all services. Verify all dimensions, with the trade concerned when pertaining to the work of other trades. Be responsible to see that Subcontractors for various trades co-operate for the proper performance of the Work.
4. Avoid scaling directly from the drawings. If there is ambiguity or lack of information, immediately inform the Consultant. Be responsible for any change through the disregarding of this clause.
5. All details and measurements of any work which is to fit or to conform with work installed shall be taken at the building.
6. Advise Consultant of discrepancies and if there are omissions on drawings, particularly reflected ceiling plans and jointing patterns for paving, ceramic tile, or carpet tile layouts, which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without direction from the Consultant.
7. Ensure that each Subcontractor communicates requirements for site conditions and surfaces necessary for the execution of the Subcontractor's work, and that he provides setting drawings, templates and all other information necessary for the location and installation of material, holes, sleeves, insets, anchors, accessories, fastenings, connections and access panels. Inform other Subcontractors whose work is affected by these requirements and preparatory work.
8. Prepare interference drawings to properly co-ordinate the work where necessitated. Refer to Section 01340.

7. Use of Premises Before Substantial Performance

1. The Owner shall have the right to enter and occupy the building, in whole or in part, for the purpose of placing fittings and equipment, or for other use, before completion of the Contract if, in the opinion of the Consultant, such entry and occupancy does not prevent or interfere with the Contractor in the performance of the Contract. Such entry shall in no way be considered as an acceptance of the Work in whole, or in part, nor shall it imply acknowledgment that terms of the Agreement are fulfilled.

8. Layout of Work

1. Layout work with respect to the work of all trades. Arrange mechanical and electrical work such as piping, ducts, conduits, panels, equipment and the like to suit the architectural and structural details.
2. Alterations necessary due to conflict and interference between trades, to be executed at no cost to the Owner unless notification is given in writing before Tender Closing Date.

9. By-Laws and Regulations

1. Nothing contained in the Drawings and Specifications are to be so construed as to be knowingly in conflict with any law, by-law or regulation of municipal, provincial or other authorities having jurisdiction.
2. Perform work in conformity with such laws, by-laws and regulations and make any necessary changes or deviations from the Drawings and Specifications subsequently required as directed and at no cost to the Owner unless notification is given in writing before Tender Closing Date.
3. Furnish inspection certificates and/or permits as may be applicable as evidence, that installed work conforms with laws, by-laws, and regulations of authorities having jurisdiction.

10. Protection

1. Take necessary precautions and provide and install required coverings to protect material, work and finishes from contamination, damage, the elements, water and frost.
2. Make good any damage or replace damaged materials, as directed. Repairs to be made by the trade having originally installed or fabricated the damaged material, finish or item. Protect electrical equipment from water and the elements.
3. Protect adjacent private and public property from damage and contamination.
4. Protect curbs and sidewalks from damage from trucking by means of boards and the like. Repair, or pay or repair of damage to existing roads and sidewalks.
5. Mark glass after glazing in an acceptable manner, and leave in place until final clean-up.
6. Protect floor finishes from construction traffic and transport of construction materials and equipment by means of 6 mm plywood panels.

11. Delivery, Handling and Storage of Materials

1. Schedule material delivery so as to keep storage at site to the absolute minimum, but without causing delays due to late delivery.
2. Store materials which will be damaged by weather in suitable dry accommodation. Provide heat, as required, to maintain temperatures recommended by material manufacturer.
3. Store highly combustible or volatile materials separately from other materials, and under no circumstances, within the building. Protect against open flame and other fire hazards. Limit volume of supply on the site to minimum required for one day's operations.
4. Handle and store material so as to prevent damage to material, structure and finishes. Avoid undue loading stresses in materials or overloading of floors.

5. Do not store material and equipment detrimental to finished surfaces within areas of the building where finishing has commenced or has been completed. All material storage within the building is subject to relocation, as directed.
6. Deliver package material in original, and Storage of unopened and undamaged containers with manufacturer's labels and seals intact.

12. Debris

1. Assign clean-up duties to a crew with own Foremen which will be of sufficient size to prevent accumulation of debris and dirt in any part of the structure or on the site.
2. Remove construction debris on a daily basis and legally dispose of same.
3. Under no circumstances, should debris, rubbish or trash be burned or buried on the site.

13. Cutting, Fitting and Patching

1. Required cutting to be done by General Contractor. Patching and painting of work to be executed by the General Contractor.
2. All sub-trades are to notify the General Contractors bidding as to the extent of the cutting, patching, and painting of their respective trades.
3. Drilling, cutting, fitting and patching necessary due to failure to deliver items to be built-in time, or installation in wrong location to be executed, as directed, at no cost to the Owner.
4. Give written notification prior to commencement of drilling and cutting of load bearing structural members and finished surfaces.
5. Cut holes with smooth, true, clean edges, after they are approved by applicable trade. Size holes and openings for hot water and steam pipes, so as to allow for expansion and contraction of such pipes.

14. Fastenings

1. Supply all fastenings, anchors and accessories required for fabrication and erection or work.
2. Metal fastenings to be of the same material as the metal component they are anchoring, or of a metal which will not set up an electrolysis action which would cause damage to the fastening or metal component under moist conditions.
3. Exposed metal fastenings and accessories to be of the same texture, color, and finish as base metal on which they occur. Keep to a minimum; evenly space and lay out.
4. Fastenings to be permanent, of such a type and size and installed in such a manner to provide positive anchorage of the unit to be secured. Wood plugs are not acceptable. Install anchors at required spacing to provide required load bearing or shear capacity.

5. Power actuated fastenings not to be used without prior written approval for specific use.

15. Surplus Materials

1. Surplus materials specifically so specified, to remain property of the Owner and be neatly stockpiled or stored, as directed.
2. All other surplus materials to become property of the Contractor; to be removed from the site and legally disposed of.

16. Setting of Work

1. Provide and pay for the services of a Land Surveyor, registered in the Province of Ontario to establish the building location and two (2) widely separated bench marks at the commencement of the work.
2. Lay out building lines for the work and provide substantial stakes, batterboards or monuments to preserve lines and levels.
3. Provide to the Consultant a survey plan on CAD indicating location of perimeter foundation walls relative to property lines and their top elevation, before construction proceeds on the foundation walls.
4. Verify on the site all grades, lines, levels, dimensions and location of hydrants, existing structures, manholes, overhead and buried utilities, existing trees, roadways, sidewalks and the like, shown on the drawings, and report omissions, errors, or inconsistencies, before commencing work.
5. Upon completion of layout work and before commencement of any excavation, give ample notification to allow for inspection of lines and levels. Such inspection does not in any way mitigate the Contractor's responsibility for accuracy of layout.
6. Preserve and protect bench marks, elevation datum and monuments and check periodically for accuracy until all work is complete. Remove same and their protection, as directed, and make good site.

17. Documents Required and General Duties

1. At Commencement of Contract

- .1 Supply Public Liability and Property Damage Insurance Certificates.
- .2 Supply Certificates of good standing from Workers' Compensation Board for the General Contractor and all Subcontractors.
- .3 Supply Contract Sum Breakdown of all sub-trades or parts of work and general expense items.
- .4 Supply Construction Schedule.
- .5 Supply Schedule of Shop Drawing Submissions.
- .6 The Owner has paid for the cost of the Building Permit. Mechanical Subcontractor will pay the cost of other Fees related to the Work Specified under Mechanical

Scope. Electrical Subcontractor will pay the cost of all permits and fees related to the Work specified under Electrical Scope.

- .7 The General Contractor is to pay all other fees and refundable deposits if applicable.
- .8 Digital copies (in PDF format) of the approved building permit drawings and the building permit will be provided. The General Contractor shall provide and maintain one (1) hardcopy of the building permit drawings for use by the Building Inspector. The general contractor shall provide and display one (1) copy of the building permit.

2. During Construction

- .1 Adjust Allowances, as required.
- .2 Organize Job Meetings in accordance with Section 01200.
- .3 Supply Monthly Progress Reports and Construction Schedule in accordance with Section 01200.
- .4 Confirm that payments are being made to subcontractors and suppliers by submission of receipts with the second and subsequent Progress Payment Application. No payment will be made for unincorporated material on the site, unless Bill of Sale in proper format is provided.

3. Upon Completion

- 1. Upon completion of work before the Final Certificate of Payment is issued, the following to be observed, executed and submitted:
 - .1 All deficiencies to have been completed in a satisfactory manner.
 - .2 All final clean-up to have been executed, as specified in Section 01710.
 - .3 Finishing Hardware, Inspection and Verification.
 - .4 Organize a Final Inspection tour at which to be present:
 - the Owner's authorized representative;
 - the Architectural, Structural, Mechanical and Electrical Consultants, and their supervisory personnel, if any;
 - the Contractor and his superintendent.
 - .5 Where the above procedure is impossible or where any deficiencies remain outstanding, the Owner's representative and the Consultant concerned, to inspect and accept the affected work and/or material upon notification by the Contractor, that all deficiencies involving this Consultant have been made good.
 - .6 A complete release of all liens arising out of this Contract, other than his own. If a subcontractor or supplier refuses to furnish a release of such a lien, furnish a bond satisfactory to the Owner to indemnify him against any claim under such a lien.
 - .7 Certificates of good standing from the Workers' Compensation board, for the General Contractor and all Subcontractors.
 - .8 All reference records, as specified, under Section 01720.
 - .9 Certificate of Inspection from Mechanical and Electrical Engineers.
 - .10 Copies of all Lists of Deficiencies with each Deficiency verified when complete by only this project's job Superintendent. The Final List of Deficiencies to be signed, completed by all concerned, if accepted.
 - .11 Statement of Completion from General Contractor.
 - .12 Final adjustment of all Allowances.
 - .13 H.E.P.C. Inspection Certificate and all other Inspection Certificates required by

- Provincial, Municipal and other authorities having jurisdiction.
- .14 Balancing Reports.
 - .15 As-Built Drawings. – Hardcopy mark ups and digital AutoCAD v2018 or higher.
 - .16 One hard copy of Operation and Maintenance Manuals. A digital copy (pdf file) of all closeout documents to be provided on a USB memory stick format.

18. Progress Reports

1. Submit to the Architect, Monthly Progress Reports consisting of a concise narrative and a marked-up summary schedule showing physical percentage complete by item and in total. These progress calculations must agree with the Progress Payment Claims.
2. Keep permanent written daily records on the site on the progress of work. Record to be open to inspection at reasonable times and copies to be furnished upon request. Records to show notes of commencement and completion of different trades and parts of work; daily high and low temperatures and other weather particulars; number of men engaged on the site (including sub-trades) broken down in groups for each type of construction work, and particulars about excavation and shoring; erection and removal of form work; pouring and curing of concrete; floor finishing; placing and compaction of backfill, masonry work; roofing.
3. Daily progress to give particulars on commencement and completion of each trade or part of work; form work erections and removal; concrete pouring and curing; floor finishing; masonry work; roofing; waterproofing; finishing trades, tests and inspection and the like.

19. Inspection and Testing

1. The Owner will retain the services of Inspection and Testing Companies. The cost of inspection and testing will be deducted from the Inspection and Testing Allowance specified under Section 01020, "Allowances".
2. Where tests or inspections reveal work not in accordance with Contract requirements, the Contractor shall pay costs for additional tests or inspections as the Architect may require to verify acceptability of corrected work.
3. The Inspection and Testing by the Owner's Testing Company does not relieve the Contractor of his responsibility to provide his own quality control in order to meet or exceed the requirements of specified standards, codes, design criteria and referenced documents.

End of Section

1.1 Selection of Products

1. If requested by the Consultant, provide the following services and/or information:
 - .1 Assist the Consultant in determining qualified suppliers.
 - .2 Obtain proposals from suppliers.
 - .3 Make appropriate recommendations for consideration of Consultant.
 - .4 Notify Consultant of any effect anticipated by selection of product or supplier under consideration, on construction schedule and contract sum.
2. On notification of selection, enter into purchase agreement with designated supplier.

1.2 Cash Allowance

1. Expend cash allowance **only** on the Consultant's written instructions and with an Owner approved Cash Allowance Expenditure (CAE) form.
2. Include in Contract price the Contractor's charges for handling at site, including uncrating and storage, protection from elements and damage, labour, installation and finishing, testing, adjusting and balancing, and other expenses including overhead and profit on account of Cash Allowance in accordance with Article GC4.1 of the General Conditions of the Contract as amended.
3. Credit the Owner with any unused portion of Cash Allowances in the statement for final payment.
4. If a test made under payment by a specific allowance proves that the material or system is not in accordance with the Documents, then the subsequent testing including Owner's testing of replacement materials or systems shall be Contractor's expense and not taken from Cash Allowance.
5. Add or deduct any variation in cost from the Cash Allowance. No adjustment will be made to Contractor's expense.
6. The amount of each allowance includes the net cost of the product or service, delivery and unloading at the site.
7. All refunds, trade and/or quantity discounts which the Contractor may receive in the purchase of goods under allowances, to be extended to the Owner.
8. Receipted invoices covering all disbursements made by the Contractor under Allowances, to be submitted to the Consultant for audit.
9. Where the Cash Allowance stipulates "Supply Only," the Contract Price and not the Cash Allowances include the installation and hook-up costs. The installation and hook-up of some equipment and materials are specified under other Sections of the Specifications. The General Contract includes the installation and hook-up not specified elsewhere.

-
10. Contractor's profit and overhead on all Cash Allowances to be carried in his lump sum amount, not in the Cash Allowances.
 11. All Cash Allowances will be dealt with in accordance with Article GC4.1 of the General Conditions.
 12. All expenditures under Cash Allowances must be approved by the Owner.
 13. Include in the Stipulated Price quoted, a Cash Allowance in the amount of **\$120,000**
One Hundred Twenty Thousand Dollars.

To be allocated as follows:

1. Roofing, air vapour barrier, waterproofing, air/barrier and steel field reviews.
 2. Testing & Inspections (soil bearing, compaction of backfill around foundation walls and below SOG, compaction of sub-base for asphalt areas, reinforcing inspections, concrete testing, mortar and grout tests)
 3. Hardware supply only.
 4. Signage: interior and exterior, supply and install.
 5. Data / IT
14. Taxes HST not to be included in Cash Allowance amounts and will be carried separate from the General Contractor's Stipulated Sum Amount.
 15. Refer to Section 01005 for co-operation with others assigned to this Section.

End of Section

1. Project Meetings for Coordination

1. In consultation with the Consultant during the second week of construction, arrange for site meetings weekly or every 2 weeks as appropriate to the stage of construction, for project coordination. Such meetings shall fall at the same time each week the meeting is scheduled.
2. Responsible representatives of the Contractor's and Subcontractor's office and field forces and suppliers shall be obliged to attend.
3. Inform the Owner, Consultant, and those others whose attendance is obligatory, of the date of each meeting, in sufficient time to ensure their attendance.
4. Provide physical space for meetings, prepare an agenda, chair and record the minutes of each meeting. Relevant information must be made available to all concerned, in order that problems to be discussed may be expeditiously resolved. Identify "action by: _____".
5. Within three days after each meeting, distribute digital copies of the minutes to each invited person.

2. Pre-construction Meeting

1. Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
2. Include in the agenda the following:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Scheduling of Work. Schedule to include a detailed breakdown of mechanical and electrical works.
 - .3 Interference with ongoing business.
 - .4 Work by other Contractors.
 - .5 Schedule of submission of shop drawings and samples.
 - .6 Requirements for temporary facilities, site sign, offices, storage sheds, utilities.
 - .7 Delivery schedule of specified equipment.
 - .8 Site security.
 - .9 Contemplated change notices, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .10 Record drawings.
 - .11 Maintenance manuals.
 - .12 Take-over procedures, acceptance, warranties.
 - .13 Monthly progress claims, administrative procedures, photographs, holdbacks.
 - .14 Appointments of inspection and testing agencies or firms.
 - .15 Insurance, transcript of policies.
 - .16 Schedule for progress meetings.

3. Project Meetings for Progress of Work

1. Conduct progress meetings in accordance with the schedule and/or decisions made at Pre-construction meeting.
2. Inform the Owner, Consultant, project consultants, Subcontractors and suppliers and those whose attendance is obligatory, of the date of the meeting, in sufficient time to ensure their attendance.
3. Include in the agenda the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revisions to construction schedule.
 - .8 Progress during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Pending changes and substitutions.
 - .12 Review proposed changes for effect on construction schedule and on completion date.
 - .13 Other business.

4. Progress Records

1. Maintain a permanent written record on the site of the progress of the work using standard OGCA form. This record shall be available to the Consultant at the site, and a copy shall be furnished to same on request. The record shall contain:
 - .1 Daily weather conditions, including maximum and minimum temperatures.
 - .2 Dates of the commencement and completion of stage or portion of the work of each trade in each area of the project.
 - .3 Conditions encountered during excavation.
 - .4 Dates of erection and removal of formwork, in each area of the project.
 - .5 Dates of pouring the concrete in each area of the project, with quantity and particulars of the concrete.
 - .6 Work force on project daily per trade.
 - .7 Visits to site by personnel of Consultant, Jurisdictional Authorities and testing companies.

End of Section

1. General

1. Submit to Architect, for review, shop drawings, product data and samples specified.
2. Until submission is reviewed, work involving relevant product must not proceed.

2. Shop Drawings

1. Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate Sections.
2. Identify details by reference to sheet and detail numbers shown on Contract Drawings.
3. Maximum sheet size 24" x 36" as a PDF.

3. Project Data

1. Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.
2. Above will only be accepted if they conform to following:
 - .1 Delete information which is not applicable to project.
 - .2 Supplement standard information to provide additional information applicable to project.
 - .3 Show dimensions and clearances required.
 - .4 Show performance characteristics and capacities.
 - .5 Show wiring diagrams (when requested) and controls.

4. Coordination of Submissions

1. Review shop drawings, product data and samples prior to submission.
2. Verify:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
3. Coordinate each submission with requirement of work and Contract documents. Individual shop drawings will not be reviewed until all related drawings are available.
4. Contractor's responsibility for errors and omissions in submission is not relieved by Architect's review of submittals.
5. Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Architect's review of submission, unless Architect gives written acceptance of specified deviations.

6. Notify Architect, in writing at time of submission, of deviations from requirements of Contract documents.
7. After Architect's review, distribute copies.

5. Submission Requirements

1. Schedule submissions at least fourteen (14) days before dates that reviewed submissions will be required to be returned.
2. Submit a digital copy (PDF) of shop drawings, product data to Architect for review.
3. Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Number of each shop drawing, product data and sample submitted.
 - .5 Other pertinent data.
4. Submissions must include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name of:
 - .1 Contractor.
 - .2 Subcontractor.
 - .3 Supplier.
 - .4 Manufacturer.
 - .5 Separate detailer when pertinent.
5. Identification of product or material.
 - .1 Relation to adjacent structure or materials.
 - .2 Field dimensions, clearly identified as such.
 - .3 Specification Section number.
 - .4 Applicable standards, such as CSA or CGSB numbers.
 - .5 Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract documents.
6. Interference Drawings
 - .1 Prepare interference drawings for all work in confined space ie: ceiling space.

End of Section

1. Access

1. Provide and maintain adequate service roads to project site to provide safe and convenient access for deliveries.

2. Contractor's Site Office

1. Contractor's trailer will be used as site office during construction and to accommodate site meetings. It shall be furnished with drawing layout table, telephone, and facsimile machine for the duration of the project. Facsimile is to be installed on dedicated line and not connected to telephone line. Pay telephone not acceptable.
2. Maintain in clean condition.
3. Provide and maintain in clean condition: two separate plans layout tables, minimum 48" x 72" each. One table shall be used by the General Contractor, and Subcontractors, at their discretion. The second shall be provided for use by subcontractors and by the consultant or Inspection and Testing Companies during site visits or project meetings.

3. Storage Sheds

1. Provide adequate weathertight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.

4. Sanitary Facilities

1. Existing sanitary facilities cannot be used during construction. Keep area and premises in sanitary condition.

5. Parking

1. Existing on-site parking can be used during construction. Spaces will be designated by owner.

6. Site Enclosures

1. Erect temporary site enclosures, hoarding, using prefabricated lock fence system.
2. Size and location of enclosure to suit area of construction.

7. Enclosure of Structure

1. Provide temporary weathertight enclosures protection for exterior openings until permanently enclosed.
2. Erect enclosures to allow access for installation of materials and working inside enclosure.
3. Design enclosures to withstand wind pressure.

4. Erect dust barriers to prevent dust migration to non-renovated areas.

8. Power supply

1. Electrical power is available in existing building and will be provided at no charge for construction purpose.

9. Water Supply

1. Water is available in existing building and will be provided at no charge for construction purpose.

10. Scaffolding

1. Construct and maintain scaffolding in rigid, secure and safe manner.
2. Erect scaffolding independent of walls. Remove promptly when no longer required.
3. Scaffolding to be designed by a professional Engineer when required under the Occupational Health and Safety act.

11. Heat and Ventilating

1. Not applicable.

End of Section

1. Construction Safety Measures

1. Observe and enforce construction safety measures required by the National Building Code; the O.B.C.; The Provincial Government; Workers' Compensation Board; and, Municipal authorities.
2. In particular, the Occupational Health and Safety Act (Ont. Re. 213/91), the Occupational Health and Safety Act, the regulations of the Ontario Ministry of Labour and Ontario Hydro Safety requirements shall be strictly enforced.
3. Contractor shall ensure that copies of all applicable construction safety regulations, codes and standards are available on the job-site throughout the period of construction. All workers are to be informed that these documents are available for reference at any time.
4. The Contractor shall ensure that all supervisory personnel on the job-site are fully aware of the contents of the Occupational Health and safety Act (Ontario Regulation 213/91 - Construction Projects) the Workers' Compensation Act" and, Bill 208 (Chapter 7, Standards of Ontario) "An Act to Amend the Occupational Health & Safety Act and the Workers' Compensation Act", and, that they comply with all requirements and procedures prescribed therein. These documents include, but are not limited to, the following construction safety requirements:
 - .1 Contractor to register with the Director of the Occupational Health and Safety Division before or within 30 days of the commencement of the project, (O.Reg. 213/91, sec 5).
 - .2 File a notice of project with a Director before beginning work on the project, (O.Reg 313/91, sec 6).
 - .3 Notification prior to trenching deeper than 1.2m, (O.Reg. 213/91, sec 7).
 - .4 Accident Notices and Reports, (O.Reg. 213/91, sec 8 through sec 12).
 - .5 General Safety Requirements, (O.Reg. 213/91, sec 13 through sec 19).
 - .6 General Construction Requirements, e.g. protective clothing, hygiene practices, housekeeping, temporary heat, fire safety, access to the job-site, machine and equipment guarding and coverings, scaffolds and platforms, electrical hazards, roofing, et al, (O.Reg. 213/91, sec 20 through sec 221).
 - .7 Establish a Joint Health and Safety Committee where more than 19 workers are employed for more than 3 months, (Bill 208, S.8(2) to S.8(14)).
 - .8 Establish a Worker Trades Committee for all projects employing more than 49 workers for more than 3 months, (Bill 208, S-8a(1) to S.8b(4)).
 - .9 Ensure that all activities arising out of (.07) and (.08) above are recorded and that minutes are available to an inspector of the Ontario Ministry of Labour.
5. The Contractor shall be considered as the "Constructor" in consideration of the rights and responsibilities for all construction safety requirements, procedures, facilities and inspection of all work performed by the Contractor, Subcontractors/Sub-trades and other Contractors engaged on this project.
6. In the event of a conflict between any of the provisions of the above authorities the most stringent provisions are to be applied.

2. Material Safety Data Sheet

1. Material safety Data Sheets (MSDS) must be available at the job-site for any product listed on the Hazardous Ingredients List prior to being used, installed or applied inside of the building.
2. A Material Safety Data Sheet is to be submitted to the Architect for any product which is known to create, or suspected of creating, a health hazard or discomfort during construction or upon commissioning of the project including, but not limited to, the following:
 - .1 adhesives
 - .2 solvents
 - .3 sealants, (caulking, vapour seals, etc.)
 - .4 sprayed-on fireproofing
 - .5 resilient flooring
 - .6 carpet, paint, varnish or other coatings
 - .7 exposed membrane waterproofing
 - .8 special coatings, (terrazo sealants, chafing coatings, etc.)
 - .9 solder, brazing and welding and other filler metal
 - .10 other products whose particles or vapours may become air borne after installation.
 - .11 any other product as directed by the Consultant.
3. Comply with WHMIS regulation, Workplace Hazardous Material Information System.

3. Fire Safety Requirements

1. Comply with requirements for Building Construction, the Ontario Building Code, the Ontario Fire Code, the requirements of Local Fire Authorities and of the requirements of the Office of the Fire Marshal.

4. Overloading

1. Ensure no part of Work is subjected to a load which will endanger its safety or will cause permanent deformation.

5. Falsework

1. Design and construct falsework in accordance with CSA S269.1-1975.

6. Scaffolding

1. Design and construct scaffolding in accordance with CSA S269.2-M1980.
2. Scaffolding to be designed by a Professional Engineer when required under the Occupational Health and Safety Act.

7. Materials Specifically Excluded

1. Asbestos and/or asbestos-containing products are not permitted. Submit Material Safety Data Sheets for any product suspected of containing asbestos if so requested by Consultant. Examples of some materials requiring close scrutiny and/or confirmation include:
 - .1 Transite drainage pipe - whether buried or above grade - not permitted.
 - .2 Composite floor tile containing asbestos - not permitted.
 - .3 Lay-in ceiling tiles containing asbestos - not permitted.
 - .4 Insulation and/or jacketing for pipes, ducts, motors, pumps, etc. - not permitted if any asbestos is present.

2. Solder for all piping is to be lead-free.
 - .1 "Lead Free" shall mean solder which contains less than 0.030% of lead when dissolved in fluoroboric and nitric acids and tested by inductively coupled argon plasma atomic emission spectroscopy. "Steelbond 281" and "Silverbrite" are acceptable solder products.
 - .2 The mechanical contractor shall provide an affidavit signed by the Principal of the company, on company letterhead, that all of the solder used on the project was either one of the two acceptable products or that the solder used (identified by brand name) meets or exceeds the testing criteria.
 - .3 The Owner shall undertake random testing of the soldered joints. Should testing prove that the solder used was not as specified, the Owner shall take action against the contractor to the full extent of the law.

3. All paint and finish coatings are to be lead and mercury-free. Submit Material Safety Data Sheets confirming that these products are free of all lead and/or mercury compounds.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. These specifications apply to all 16 divisions of the project specification. It is the responsibility of the contractor to apply these provisions wherever practical within specification limits to all products and services used on this project.
2. It is recognized that currently specified materials and methods may conflict with the basic intention of this section. Where reasonable alternate materials and methods exist that are not specified here, and that do not compromise quality or create additional cost for the owner, notify the Architect of such alternate materials or methods. Do not proceed to use alternate materials or methods to those specified without the express approval of the Architect.
3. Elsewhere, apply the provisions of this section to all work. Exceptions can only be made when signed off by the Architect. Suitability of all products used is the responsibility of the contractor.

1.2 Compliance Specifications

1. The contractor must comply with all applicable health, safety and environmental regulations.

1.3 Beyond Compliance Specifications

1. These specifications apply in addition to all applicable health, safety and environmental compliance regulations. They are incorporated here to reflect the Owner's intention to develop a specification which maximizes environmentally "friendly" materials and methods wherever possible within current technical and budget limitations.
2. Beyond compliance specifications recognize that performance well beyond the minimum regulatory standard is often desirable, possible and affordable, often with no cost or low cost options. It also recognizes that application methods or protocols may be as important as the material specified. Therefore these specifications cover both material and methods.
3. The primary goal of beyond compliance specification is to reduce the use of products or methods which have negative health and environmental impacts both during and after construction. These considerations may include full life cycle impacts, associated with raw materials, manufacturing, transport, deconstruction and their eventual fate.
4. These specifications will specifically address primary categories of readily identifiable products, ingredients and methods.
5. These provisions apply to both indoor and outdoor applications equally.

1.4 Exceptions

1. These specifications recognize that not all substitutes are equal and therefore exceptions can be made based on substantive evidence of necessary and superior performance. Special considerations may be given to restricted substances when secondary provisions are made such as sealed in place (contained) applications. All such exceptions must be approved in writing by the Architect.

PART 2 - MATERIALS

2.1 Products or Substances to be Avoided or Limited in Use

1. No product containing the following substances may be used on this project when an equivalent product without or with a lower concentration of this substance is suitable and available. All products containing substances which are known to cause health effects including but not limited to cancer, mutagenic, neurological, or behavioral effects should be avoided if suitable substitutes not containing or containing lower concentrations are available. This provision shall be limited to information contained on Material Safety Data Sheets, therefore MSDS sheets must be reviewed for all products for which such sheets are required. Applications for exceptions must be accompanied by related MSDS and product application and performance sheets, clearly showing a need for the exception.

2.2 Volatile Organic Compounds

1. No product containing volatile organic compounds (in over simplified terms volatile petro chemical or similar plant derived solvents) may be used on this project when a suitable non VOC or failing that a low VOC substitute is available. Manufacturers may refer to the U.S. EPA definition of VOC's for guidance or alternatively use the low molecular weight organic compound descriptor.

Example: Paints, Coatings, Primer, Adhesives, Chalks, Firestops, etc.

2. Waterborne equivalents are available for most of the solvent borne products used in construction and in most cases would be the preferred alternative. Waterborne products may in some instances have high VOC contents, therefore the fact that a product is waterborne does not automatically make it acceptable.

2.3 Chlorinated Substances

1. Poly Vinyl Chloride (vinyl) and other chlorinated products should be avoided if suitable substitutes are available.

2.4 Plasticizers

1. Plasticisers which offgass (low molecular weight) should be avoided.

2.5 Man Made Mineral Fibres

1. Products containing mineral fibres which can be emitted or abraded should be avoided.

Examples: duct liner, mineral fibre ceiling tiles, etc.

2.6 Radiation

1. Products or methods which result in the lowest emission of Electro Magnetic Fields are preferred.

2.7 Biocides

1. Products containing biocides (pesticides, miticides, mildewicides, fungicides, rodenticides, etc.) are not to be used if suitable alternatives are available. Highly stable, low human toxicity biocides such as Portercept may be acceptable substitutes. Biocide formulas which break down, emit powders or offgass should be avoided.

2.8 Heavy Metals

1. Heavy metals such as lead, cadmium, mercury etc. should be avoided.

2.9 Aluminum

1. Raw aluminum should be avoided, anodized or factory painted aluminum is acceptable. This is particularly applicable to surfaces which people can touch.

2.10 Ozone Depleting Substances

1. Products which contain or which use Ozone Depleting Substances such as Bromide, Chlorofluorocarbons (CFC) or Hydrofluorocarbons (HFC) etc. should be avoided if suitable substitutes are available.

2.11 Greenhouse Gasses

1. Products which contain, use or generate Greenhouse gasses such as CO₂ should be avoided if suitable substitutes are available.

2.12 Bituminous (tar) Products

1. Products containing tar compounds should not be used if suitable substitutes are available.

2.13 Chemical Compounds

1. Products containing the following chemical compounds should not be used if suitable substitutes are available: Neoprene, Latex, Butyl, ABS, Formaldehyde.

2.14 Adhesives

1. Adhesives containing solvents or other non preferred ingredients should be avoided if suitable substitutes are available, including systems designs which do not need adhesives or can use mechanical etc. fastening alternatives

2.15 Composite Products

1. Some composite products contain adhesives such as formaldehyde which are not preferred, and some composites such as Fibre Reinforced Plastics are not practical for recycling. These products should be avoided if suitable substitutes are available.

2.16 Cleaners and Solvents

1. Products, equipment, and methods which require the use of cleaners and solvents are not preferred if suitable substitutes are available. Examples of preferred products would include No Wax floors, or primerless caulks and adhesives, or products not requiring caulks and adhesives.

End of Section

1.1 Fires

1. Fires and burning of rubbish on site is not permitted.

1.2 Disposal of Wastes

1. Do not bury rubbish and waste materials on site.
2. Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.3 Drainage

1. Provide temporary drainage and pumping, as necessary to keep excavations and site free from water.
2. Do not pump water containing suspended materials into waterways, sewer or drainage systems.
3. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 Site Clearing and Plant Protection

1. Protect trees and plants on site and adjacent properties, which are to be retained.
2. Wrap in burlap trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.
3. Protect roots of trees to drip line during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

1.5 Pollution Control

1. Install and maintain temporary erosion and pollution control features as requested by local Municipal and Regional Authorities.
2. Install, maintain, restore, replace sediment control fence as required by Municipal and Regional authorities. The fence shall be in accordance with Municipal standards.
3. Install, maintain, restore, replace roadside catchbasin sediment protection at all street catchbasin in accordance with Municipal standards.
4. Install, maintain, restore, replace catchbasin sediment barrier immediately after installation of catch basins on the property in accordance with Municipal Standards.

5. Install and maintain a mud mat at the construction access, consisting of 30m x 5m x 0.45m clear stone and mud mats. Refer to site plan for location.
6. Control emissions from equipment and plant to local authorities' emission requirements.
7. Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

End of Section

1. General

1. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
2. Store volatile wastes in covered metal containers, and remove from premises daily.
3. Prevent accumulation of wastes which create hazardous conditions.
4. Provide adequate ventilation during use of volatile or noxious substances.

2. Materials

1. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
2. Provide on-site dump containers for collection of waste materials, and rubbish.

3. Cleaning During Construction

1. Maintain project grounds, and public properties free from accumulations of waste materials and rubbish.
2. Remove waste materials, and rubbish from site.
3. Vacuum clean interior building areas when ready to receive finish painting, and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy.
4. Schedule cleaning operations so that resulting dust and other contaminants will not fall on wet, newly painted surfaces.

4. Final Cleaning

1. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all surfaces exposed to view; leave project clean and ready for occupancy.
2. Employ experienced workers, or professional cleaners, for final cleaning.
3. In preparation for Substantial Performance or Fitness for Occupancy status, whichever occurs first, conduct final inspection of interior and exterior surfaces exposed to view, and of concealed spaces.
4. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all sight-exposed interior and exterior finished surfaces; polish resilient and ceramic surfaces so designated to shine finish. Vacuum carpet.
5. Clean and polish glass and mirrors.

6. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.
7. Broom-clean paved surfaces; rake clean other surfaces of grounds.
8. Clean exposed ductwork and structure.
9. Replace filters.
10. Clean bulbs and lamps and replace those burned out.
11. Clean diffusers and grilles.
12. Clean sinks, faucets, and water closets and controls.
13. Maintain cleaning until project, or portion thereof, is occupied by Owner.

End of Section

1. Requirements Included

1. Record documents, samples, and specifications.
2. Equipment and systems.
3. Product data, materials and finishes, and related information.

2. Quality Assurance

1. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

3. Format

1. Organize data in the form of an instructional manual.
2. Binders: commercial quality, 8½" x 11" maximum 2½" ring size.
3. When multiple binders are used, correlate data into related consistent groupings.
4. Cover: Identify each binder with type or printed title "Project Record Documents", list title of Project, identify subject matter of contents.
5. Arrange content under Section numbers and sequence of Table of Contents.
6. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
7. Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

4. Contents, Each Volume

1. Table of Contents: Provide title of project; names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
2. For each Product or System: list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
3. Product Data: mark sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
4. Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
5. Typed Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

5. Submission

1. Submit for review a digital pdf file of completed closeout documents in final form 15 days prior to substantial performance. For equipment put into use with Owner's permission during construction, submit Operating and Maintenance Manuals within 10 days after start-up. For items of Work delayed materially beyond date of Substantial Performance, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.
2. Consultant comments will be returned and the contractor is to revise content of documents as required prior to final submittal
3. Submit one (1) hard copy of revised volumes of data in final form within ten days after final inspection.
4. For contract drawings (architectural, landscaping, structural, mechanical, electrical), transfer neatly as-built notations onto hard copy and submit.
5. Prepare digital pdf file for submission on USB of completed closeout documents.

6. Record Documents and Samples

1. In addition to requirements in General Conditions, maintain at the site for Owner one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
2. Store Record Documents and Samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage.
3. Label and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "Project Record" in neat, large, printed letters.
4. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.
5. Keep Record Documents and samples available for inspection by Consultant.

7. Recording As-Built Conditions

1. Consultant will provide electronic copies of project drawings in PDF format. Make one (1) hardcopy of the project drawings for the purpose of recording as-built conditions. Mark and record changes on an on-going basis as construction proceeds. **Near the end of the construction period transfer all marks to the supplied electronic documents, and submit for consultant review as project record as-built documents.** As an alternative, scan the record set in PDF format and submit for consultant review.
2. Refer to drawings/specifications for additional mechanical and electrical requirements.
3. Record information concurrently with construction progress. Do not conceal work until required information is recorded.
4. Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measure depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
5. Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalog number of each project actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and Change Orders.
6. Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

8. Digital As-Built Drawings

1. Retain the services of a CAD drafting company acceptable to the consultant to prepare digital CAD As-Built documents for all Architectural and Engineering drawings.
2. After the consultant has found the Redlined As-Built drawings to be acceptable, transfer to digital file all information recorded on As-Built drawings. Layering of information as per consultant's instructions.

9. Equipment and Systems

1. Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

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2. Panelboard Circuit Directories: provide electrical service characteristics, controls, and communications.
 3. Include installed colour coded wiring diagrams.
 4. Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instruction. Include summer, winter, and any special operating instructions.
 5. Maintain Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair and reassemble instructions; and alignment, adjusting, balancing, and checking instructions.
 6. Provide servicing and lubrication schedule, and list of lubricants required.
 7. Include manufacturer's printed operation and maintenance instructions.
 8. Include sequence of operation by controls manufacturer.
 9. Provide original manufacturer's parts lists, illustrations, assembly drawings, and diagrams required for maintenance.
 10. Provide installed control diagrams by controls manufacturer.
 11. Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
 12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 13. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 14. Include test balancing reports as specified in mechanical specifications.
 15. Additional Requirements: As specified in individual specification sections.

10. Materials and Finishes

1. Building Products, Applied Materials, and Finishes: include product data, with catalog number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
2. Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
3. Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommend schedule for cleaning and maintenance.
4. Additional Requirements: as specified in individual specifications sections.

11. Guarantees, Warranties and Bonds

1. Separate each warranty or bond with index tab sheets keyed to the List of Contents listing.
2. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal. Use Guarantee/Warranty Form as provided in Section 01721 whenever standard preprinted trade or manufacturer's Guarantee/Warranty forms are not available.
3. Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
4. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
5. Verify that documents are in proper form, contain full information, and are notarized.
6. Co-execute submittals when required.
7. Retain warranties and bonds until time specified for submittal.

End of Section

1. Notes

1. To be made out on the letterhead of Guarantor or Warrantor which usually is a Subcontractor.
2. This format is to be used only when standard preprinted trade or manufacturer's forms are not available. Preprinted forms are to include all elements of information shown on this sample or as a minimum.
3. Comply with Requirements for Guarantee/Warranty as specified in Section 01720, Article 10.

To: Grand Erie District School Board
349 Erie Avenue, Brantford, Ontario N3T 5V3

Date: _____

SECTION _____

TITLE _____

GUARANTEE/WARRANTY TO:

OWNER Grand Erie District School Board

PROJECT Banbury Heights School Child Care Centre Addition

ARCHITECT Grguric Architects Incorporated

REFERENCE (to specifications or drawings)

TIME Period of Guarantee/Warranty: _____ years

GUARANTEE/
WARRANTY Starting Date: Substantial Performance as certified by Architect

Date: _____

(Description of Guarantee/Warranty)

Upon written notification from the Owner or the Consultant that the above work is defective any repair or replacement work required shall be to the Consultant's satisfaction at no cost to the Owner.

This guarantee shall not apply to defects caused by the work of others, maltreatment of materials, negligence or Acts of God.

SUBCONTRACTOR

Signature

Date

Authorized Signing
Officer:

(Name Printed)

Title

Name of Firm:

Address:

Telephone Number

CONTRACTOR

Signature

Date

Authorized Signing
Officer:

(Name Printed)

Title

Name of Firm:

SEAL

Address:

Telephone Number

End of Section

1. Maintenance Manual

1. On completion of project, submit to Architect one (1) copy of Operations Data and Maintenance Manual in English, made up as follows:
 - .1 Bind data in vinyl hard covered, 3 ring loose leaf binder for 8½" x 11" size paper.
 - .2 Enclose title sheet, labeled "Operation Data and Maintenance Manual", project name, date and list of contents.
 - .3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs protected with celluloid covers fastened to hard paper dividing sheets.
 - .4 A digital copy of all documents in the operations and manuals must be provided on a USB, format to be PDF.

2. Include following information, plus data specified.
 - .1 Maintenance instructions for finished surface and materials.
 - .2 Copy of hardware and paint schedules.
 - .3 Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number.
 - .4 Names, addresses and phone numbers of sub-contractors and suppliers.
 - .5 Guarantees, Warranties and bonds showing:
 - .1 Name and address of project.
 - .2 Guarantee commencement date (date of Final Certificate of Completion).
 - .3 Duration of guarantee.
 - .4 Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
 - .5 Signature and seal of Contractor.
 - .6 Additional material used in project listed under various Sections showing name of manufacturer and source of supply.

3. Neatly type lists and notes. Use clear drawings, diagrams or manufacturers' literature.

4. Include in the Manuals a complete set of final shop drawings indicating corrections and changes made during fabrication and installation.

End of Section

1. General

1. **Bonds:** Refer to Supplementary General Conditions and to Standard Contract Document CCDC No. 2, for bonding requirements for this project, both at the time of tender submission and throughout the duration of the construction period.

2. Standard Warranty

1. Refer to Supplementary General Conditions and to Standard Contract Document CCDC No. 2, for warranty requirements and conditions for the standard warranty which is required for the work of this contract.

3. Extended Warranties

1. Refer to individual specifications sections for requirements of extended warranties required for particular sections or items of work.
2. Extended warranties are required to be issued by manufacturers, fabricators, suppliers and/or installers, sometimes jointly, due to their unique position in the construction process and their ability to guarantee a particular section of work. Refer to individual requirements of extended warranties requested.
3. Unless specifically noted otherwise, all extended warranties shall commence on the date of Substantial Performance of the Work as certified by the Consultant.
4. Listed below is a summary of extended warranties required for individual Sections. This list, if inconsistent with the specified requirements of individual extended warranties, shall be deemed correct with respect to length of extended warranties. Extended warranties required shall include, but not be limited to, the following:

Extended warranties (total warranty period listed, including entire building warranty)

Synthetic Grass Surfacing (02500)	manufacturer 5 year fading
Asphalt Paving 02600)	2 years
Millwork (06400)	2 years
Aluminum Composite Panels	refer to Section 07421
SBS Modified Bituminous Membrane Roofing	refer to Section 07520
Preformed Metal Siding (07615)	5 years
Sheet Metal Flashing and Trim (07620)	2 years
Caulking (07900)	5 years
Joint Sealers for Roofing (07901)	2 years
Commercial Steel Doors and Frames	refer to Section 08100
Aluminum Windows (08520)	10 years
Glazing (08800)	5 years
Floor Porcelain Tile (09330)	3 years
Elastomeric Sheet Flooring (09670)	2 years
Acoustic grids and tiles (09510)	2 years
Painting (09900)	2 years
Window Coverings (10001)	10 years

End of Section

1.1 Description of Work

1. This Section includes parameters for the general design and performance for the work of Sections which comprise the building envelope including but not limited to, masonry cavity walls, metal cladding, soffits, windows, entrances and roofing.
2. Performance of the building envelope shall be guaranteed by the Contractor.

1.2 Design

1. **General:** Design and engineer as required, fabricate, erect, and/or install building envelope in compliance with the Ontario Building Code, other regulations and requirements of authorities having jurisdiction.
2. Take into account construction tolerance limitations, creepage, deflection and other movements of the structure.
3. Accommodate, by means of expansion and contraction provisions, any movement in the building envelope assemblies themselves and between the assemblies and the building structure. Allow for expansion and contraction of components caused by ambient temperature range, surface temperature variation of components, wind, seismic forces, structural deflection and racking; without causing misalignment of joints, breakage of joints and air/vapour barriers, water and air penetration through the assembly, glass breakage, or other defects detrimental to appearance or performance.
4. Method of attachment to the structure shall take into account site peculiarities so that site and air vibrations or normal temperature movements of the building do not loosen, weaken and/or fracture the connection between building envelope assembly components and the structure or between the components themselves.
5. Reinforce building envelope assembly components, as required, so that the members can safely sustain design loads.
6. Assemble and secure assemblies in manner which will keep stresses on sealants within the sealant manufacturer's recommended maximum performance levels.
7. **Rain Screen Principle:** Except where detailed otherwise, construct building envelope assemblies based on the "Rain Screen" principle as advocated by the National Research Council of Canada. All voids between the assembly components as well as those between components and the structure shall have:
 - .1 gaskets, baffles, overlaps, seals and compartmentalization as required to provide a barrier "Rain Screen" to effectively prevent excessive rain water entry into any of the building envelope cavities but to allow pressure equalization of cavity air spaces.

- .2 air barriers and seals are required to prevent entry of interior building air into building envelope cavities, and exterior air into the building. Air barriers and seals shall be able to withstand wind design pressures.
- .3 such provisions in the form of openings between cavities and the building exterior of sufficient cross sections to provide adequate pressure equalization. All openings shall be effectively baffled against direct rain water entry. Air spaces shall be baffled and compartmentalized to prevent chimney effect within the air spaces vertically and horizontally.
- .4 Thermal separators, isolators and seals placed to eliminate contact between interior humid air and a cold surface or structural component to prevent condensation and ice build-up on such surfaces during cold weather.

1.3 Water, Vapour and Moisture

1. Comply with the design and performance requirements specified in the building code, and as specified herein, including the following principles:
2. Drain to the exterior face of the assembly, any water entering at joints and any condensation occurring within the building envelope assembly.
3. Design, fabricate and install the assembly to be watertight to the interior under the interior and exterior design conditions in combination with movements occurring due to loads imposed.
4. At design conditions no water penetration to the building interior side of the assembly shall occur.
5. The requirements for an air barrier and a vapour barrier are intended to be provided at the same plane in the building envelope design unless otherwise indicated or specified. In such cases, the Drawings and Specifications refer to "air/vapour barrier". The definition of the air/vapour barrier for the purpose of these Specifications is "a continuous membrane including joints of membrane between components and to adjacent construction which prevents or retards penetration of moisture laden air and the diffusion of water vapour through it".
6. The maximum water vapour transmission of all components forming the vapour barrier shall be (1.72 ng/Pa x s x sq.m.) (0.3 Imperial perms) unless specified otherwise.
7. At design conditions no condensation shall occur on room side surfaces.
8. Sound: Provide completed installations free from vibrations, wind whistles and noise due to thermal and structural movement and wind pressure.
9. Seismic: Fabricate and erect cladding assemblies to prevent damage due to earthquake forces as required by The Ontario Building Code.

1.4 Quality Control

1. **General:** Materials and workmanship shall be subject to inspection at any time. Cooperate in permitting access for inspection to all places where work is being done or stock is being stored.
2. Owner's quality control inspection and testing is specified in the technical sections and will be paid from Cash Allowance except as otherwise specified. Pay for inspections and retesting to verify acceptability of corrected work.
3. Allow sufficient time for testing, evaluation, alterations and retesting so as not to interrupt the Progress Schedule for the Project.
4. The Consultant may require testing of connections and special prefabricated inserts, as part of the work of this Section.

1.5 Sealants

1. Sealants used for the various building envelope assemblies shall be selected from those specified in the respective assembly Section, and shall be coordinated with the sealant being provided under other building envelope Sections. Preferably, one sealant by the same manufacturer shall be used throughout. If different sealants are selected, from those specified, it is the responsibility of the respective Section to ensure compatibility between selected sealant, substrates, and sealants of other Sections which come in contact with the selected sealant.

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1. Not applicable.

1.2 Existing Conditions

1. Take over structures to be demolished based on their conditions (on date that tender is accepted).

1.3 Demolition Drawings

1. Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details clearly showing sequence of disassembly work or supporting structures.

1.4 Protection

1. Prevent movement, settlement or damage of adjacent grades. Provide bracing, shoring as required.
2. Prevent debris from blocking surface drainage inlets which must remain in operation.
3. Protect existing items designated to remain and materials designated for salvage. In the event of damage to such items, immediately replace or make repairs to approval of Owner and at not cost to Owner.

PART 2 - PRODUCTS

1. Not applicable.

PART 3 - EXECUTION

3.1 Work

1. Dispose of demolished materials except where noted otherwise.

3.2 Safety Code

1. Unless otherwise specified, carry out demolition work in accordance with Canadian Construction Safety Code 2010.
2. Should material resembling spray or trowel-applied asbestos be encountered, notify Architect. Any asbestos encountered will be removed by the Owner's Contractor.

3.3 Preparation

1. Disconnect electrical and telephone service lines entering areas to be demolished as per rules and regulations of authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized to serve other areas during period of demolition.
2. Inspect site and rectify with Architect items designated for removal and items to remain.
3. Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction.
4. Natural gas supply lines to be removed by gas company or by qualified tradesman in accordance with gas company instructions.

3.4 Demolition & Field Work

1. Demolish areas as indicated on the drawings.
2. Remove existing equipment, services and obstacles, where required, for refinishing or making good of existing surfaces, and replace same as work progresses.
3. At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling. Protect interiors of parts not to be demolished from exterior elements at all times).
4. Demolish in a manner to minimize dusting. Keep dusty materials wetted.
5. Demolish masonry and concrete walls in small sections. Carefully remove and lower structural framing and other heavy or large objects.
6. Burning materials on site is not permitted.
7. Remove contaminated or dangerous materials from site and dispose of in safe manner.
8. Employ rodent and vermin exterminators to comply with health regulations.

3.5 Salvage

1. Carefully dismantle items containing materials for salvage and stock pile salvaged materials at locations as directed by Architect.

3.6 Restoration

1. Upon completion of work, remove debris, trim services and leave work site clean.
2. Reinstall areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.

End of Section

PART 1 - GENERAL

1.1 General Requirements

1. Division One, General Requirements is part of this Section and shall apply as if repeated here.

1.2 Related Work Specified Elsewhere

1. Site Grading Section 02210
2. Excavation, Backfilling and Rough Grading Section 02220

1.3 Examination

1. Examine the Drawings, Specifications, and Bore Hole data which show soil conditions at boreholes in locations shown on Drawings. Visit the site and determine the work extent and nature of the existing conditions. In no circumstances will any claims against the Owner be allowed resulting from failure to ascertain the work herein described or implied.
2. Report to the Consultant in writing any conditions which will prejudice the proper completion of the work of this Section. Commencement of work constitutes acceptance of existing conditions.

1.4 Protection

1. Establish locations of all electrical, telephone, or other service installations existing in the areas of site preparation by contacting the service owners and obtaining their approval to work in such areas. Contact the Municipality and local utilities to review proposed scheduling, work activities and regulations pertaining to all work beyond the limits of the property including but not limited to parking areas, stormwater outlet and headwall and asphalt driveway entrances. Provide adequate markers or take protective measures to ensure that no damage will be caused under this Section. Repair or replace damaged work as required without cost to the Owner.
2. Electronically locate, map and record location of services prior to doing any excavation.

1.5 Dust Control

1. Provide and maintain to the Consultant's satisfaction, adequate system to avoid any nuisance caused by dust and dirt rising throughout the area of operations.

1.6 Silt Control

1. Provide and maintain to the Consultant's and to the Authorities' satisfaction, control systems to prevent silt from entering any storm drainage system. Refer to Site Services Drawing for details.

PART 2 - PRODUCTS

2.1 Materials

1. Not applicable.

PART 3 - EXECUTION

3.1 Disposal of Waste and Surplus Materials

1. Except where specified or indicated on Drawings to be retained on site, or to be reused, remove from the site, all waste and surplus materials resulting from site preparation work on a daily basis. Dispose of as required in accordance with local or provincial regulations. Under no circumstances shall the burning of rubbish be permitted on the site. Where items are to be reused, store on site where designated and provide temporary protection to same to prevent damage by construction operations.

End of Section

PART 1 - GENERAL

1.1 General Requirements

1. Division One, General Requirements is part of this Section and shall apply as if repeated here.

1.2 Related Work Specified Elsewhere

- | | |
|--|---------------|
| 1. Site Grading: | Section 02210 |
| 2. Excavation, Backfilling and Rough Grading | Section 02220 |
| 3. Topsoil and Finish Grading: | Section 02260 |

1.3 Definitions

1. Clearing consists of cutting off trees and brush vegetative growth to not more than a specified height above ground and disposing of felled trees and surface debris.
2. Close-cut clearing consists of cutting off or removing at or near flush with original ground surface standing trees, brush, scrub, roots, stumps and embedded logs and disposing of fallen timber and surface debris.
3. Clearing isolated trees consists of cutting off to not more than a specified height above ground of trees designated grubbing and disposing of felled trees and debris.
4. Underbrush clearing consists of removal from treed areas of undergrowth, deadwood, and trees smaller than 50 mm diameter and disposing of all fallen timber and surface debris.
5. Grubbing consists of excavation and disposal of stumps and roots boulders and rock fragments to not less than a specified depth below original ground surface.

1.4 Protection

1. Prevent damage to fencing trees, landscaping, natural features, bench marks, existing buildings, existing pavement, utility lines, site appurtenances, water courses, root systems of trees which are to remain. Make good damage.
2. Apply approved tree paint to cuts or scars suffered by vegetation designated to remain.

PART 2 - PRODUCTS

2.1 Materials

1. Not applicable.

PART 3 - EXECUTION

3.1 Clearing

1. Clear trees, shrubs, uprooted stumps and surface debris not designated to remain.
2. Cut off trees, brush, and scrub as indicated or as directed at a height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations may be 1000 mm.
3. Cut off unsound branches and cut down dangerous trees overhanging area cleared.
4. Close Cut Clearing
5. Cut off trees, shrubs, stumps and other vegetation at ground level to within 100 mm of original ground surface.
6. Perform close cut clearing by hand so that existing insulation of fibrous material is not damaged.
7. Cut off unsound branches and cut down dangerous trees overhanging area cleared.

3.2 Isolated Trees

1. Cut off isolated trees indicated or directed by Consultant at a height of not more than 300mm above ground.
2. Grub out isolated tree stumps.
3. Underbrush Clearing
4. Clear underbrush from areas indicated at ground level.

3.3 Grubbing

1. Grub out stumps and roots to not less than 400 mm below original ground surface.
2. Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension, but less than 0.25 m³.

3.4 Removal and Disposal

1. Remove cleared and grubbed materials off site in a manner acceptable to Consultant and Municipal Authorities.
2. Usable timber and rocks become property of Contractor.

3.5 Finished Surface

1. Leave ground surface in a condition suitable for immediate grading operations or stripping of topsoil.

End of Section

PART 1 - GENERAL

1.1 Related Work

- | | |
|---------------------------------|---------------|
| 1. Clearing and Grubbing: | Section 02110 |
| 2. Site Grading: | Section 02210 |
| 3. Top Soil and Finish Grading: | Section 02260 |

PART 2 - PRODUCTS

1. Not applicable.

PART 3 - EXECUTION

3.1 Stripping of Top Soil

1. Remove top soil from areas to be excavated, paved and regraded.
2. Strip top soil when dry enough to prevent contamination of subgrade.
3. Stockpile top soil on site, where directed.
4. Remove from site existing grass and vegetation and surplus top soil, if any.

End of Section

PART 1 - GENERAL

1.1 General Requirements

1. Division One, General Requirements is part of this Section and shall apply as if repeated here.

1.2 Related Work Specified Elsewhere

- | | |
|--------------------------------|---------------|
| 1. Clearing and Grubbing: | Section 02110 |
| 2. Topsoil and Finish Grading: | Section 02260 |
| 3. Asphalt Paving: | Section 02600 |

1.3 Site Conditions

1. Refer to Section 00300.
2. Known underground and surface utility lines and buried objects are indicated on site plan. Confirm exact locations of utility lines and buried objects prior to machine excavation or grading.

1.4 Protection

1. Prevent damage to trees, natural features, bench marks, existing pavement, surface or underground utility lines which are to remain. Make good damage.

PART 2 - PRODUCTS

2.1 Materials

1. Fill material: Type "4" in accordance with Part 2 of Section 02220 – Excavation, Backfilling and Rough Grading.
2. Obtain approval of excavated or graded material used as fill for grading work. Protect approved material from contamination.

PART 3 - EXECUTION

3.1 Stripping of Topsoil

1. The original topsoil will be stripped from the site as part of the work described in Section 02120.

3.2 Grading

1. The Contractor shall use the information shown on the Drawings as well as the information observed during visits to the site during the Tender Period, as the basis for the "Existing Conditions" of the site.
2. Rough grade to levels, profiles, and contours allowing for surface treatment as indicated. Ensure that rough grading operations to not promote water ponding in construction areas. Level depressions with Type "4" fill if suitable compaction can be demonstrated.
3. Perform construction grading and/or pre-grading to allow proper construction access to the Work. Grade site to accommodate vehicle movement, materials, handling and storage and placement of granular base materials (to be used during the construction period).
4. Grade to prevent water ponding on site during construction period. Create additional ditches, swales, slopes, ponds, etc. as required by Contract Documents and Municipal Authorities for control of drainage, sedimentation and topsoil retention.
5. Rough grade to following depths below finish grades:
 - 150 mm for grassed areas.
 - 450 mm for flowerbeds.
 - 600 mm for shrub beds.
 - 540 mm for heavy duty asphalt paving.
 - 420 mm for medium duty asphalt paving.
 - 275 mm for concrete walks and/or unit paving.

Note that the rough grading elevations listed above are nominal.

6. Slope rough grade away from building 1:50 minimum.
7. Grade swales and ditches to profiles and depths indicated.
8. Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
9. Compact filled and disturbed areas to maximum dry density to ASTM D698-78, as follows:
 - 90% under landscape areas.
 - 98% under paved and walk areas and playing fields.
10. Do not disturb soil within branch spread of trees or shrubs to remain.

3.3 Testing

1. Inspection and testing of soil compaction will be carried out by designated testing laboratory as directed by Consultant.
2. Costs of tests will be paid by a Cash Allowance specified in Section 01020.

3.4 Surplus Material

1. Remove surplus material from site in a manner acceptable to Consultant and Municipal Authorities.
2. Remove material unsuitable for fill, grading or landscaping from site in a manner acceptable to Consultant and Municipal Authorities.

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

- | | |
|---|-------------------|
| 1. Excavation and Backfill for Mechanical and Electrical: | Divisions 15 & 16 |
| 2. Safety Requirements: | Section 01545 |
| 3. Environmental Protection: | Section 01575 |
| 4. Top Soil and Finish Grading: | Section 02260 |

1.2 Shoring, Bracing & Underpinning

1. Prevent movement or settlement, safeguard and maintain integrity of adjacent structures, earth, bench marks, services, walks, paving, trees, bearing piles, curbs, landscaping, adjacent grades. Provide bracing, shoring and underpinning required.
2. Shore and brace excavations to prevent failure in accordance with Canadian Construction Safety Code 1977 and applicable local regulations.
3. Make good and pay for any damage and be liable for any injury resulting from inadequate shoring, bracing or underpinning.

1.3 Utility Lines

1. Before commencing work, establish location and extent of underground utility lines in area of excavation. Notify Architect of findings.
2. Known underground and surface utility lines and buried objects are indicated on site plans. No guarantee is given of completeness and accuracy.
3. Make good and pay for damage to existing utility lines resulting from work.

1.4 Protection

1. Protect bottoms of excavations from softening. Should softening occur, remove softened soil and replace with footing concrete.
2. Protect bottoms of excavations from freezing.
3. Construction banks in accordance with local by-laws.
4. Provide adequate protection around bench markers, layout markers, survey markers, and geodetic monuments.
5. Provide protection to ensure no damage to existing facilities and equipment situated on site.
6. Effect approved measures to minimize dust as a result of this work.

7. Do not stockpile excavated material to interfere with site operation or drainage.

1.5 Compaction Densities

1. Compaction densities are percentages of maximum densities obtainable from ASTM D698-70.

PART 2 - PRODUCTS

2.1 Materials

1. See Soil Report for suitability of existing soil as fill. Excavated or graded material to be approved before use as fill. Protect such approved material from contamination.
2. **Type 1 Fill:** Clean, graded 20 mm clear crushed stone. Containing less than 10% passing the No. 4 sieve.
3. **Type 2 Fill:** Clean, natural river sand and gravel material, free from silt, clay, loam friable or soluble materials and organic matter, graded within the limits of MTC granular class "B" material.
4. **Type 3 Fill:** Concrete backfill 15 Mpa strength at 28 days complying with the requirements of Section 03300.
5. **Type 4 Fill:** Excavated pervious soil free from roots, rocks larger than 75 mm and building debris. If sufficient quantity of material is not available from excavation, use imported fill having same or better characteristics.
6. **Type 5 Fill:** Fine grain material such as clay, that is relatively impervious to the flow of water.

2.2 Stockpiling

1. Stockpile fill materials in areas designated by Architect. Stockpile granular materials in manner to prevent segregation. Protect stockpiled fill material from freezing.
2. Protect fill materials from contamination.

PART 3 - EXECUTION

3.1 Preparation

1. **Lines and Levels:** Establish accurate lines and levels as required. Supply batter board, line stakes and templates. Establish permanent reference lines and bench marks required.
2. Prevent damage to sides and bottoms of excavated pits and trenches from exposure to sun and rain which would cause cave-ins or softening of beds on which foundations and drains rest.

3. **Keep excavations free of water while work is in progress:** Prevent flow of water and earth fines into excavated pits and trenches. Seal or divert flow from springs that fill excavations.
4. Bail, pump out or divert water from excavations, from whatever cause, as it accumulates, and until the permanent drainage is operational and foundations are in place.

3.2 Excavating

1. Excavate to elevations and dimensions indicated for installation, construction and inspection of work.
2. Excavate to well defined lines to minimize quantity of fill material required.
3. Earth bottoms of excavations to be dry, undisturbed soil, level, free from loose or organic matter.
4. Excavation must not interfere with normal 45 deg. splay of bearing from bottom of any footing.
5. Correct unauthorized excavation at no extra cost as follows:
 - .1 Fill under bearing surfaces and footings with type 3 fill.
 - .2 Fill under other areas with Type 2 fill compacted to 100% density.
6. Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw. Seal cuts with approved tree wound dressing.
7. Remove paving, walks, rubble and other obstructions encountered in course of excavation.
8. Keep a record of founding elevations of footings. This record must be approved by the *Consultant* before claims for extra will be considered.
9. Extras will be paid only if, upon excavating to the specified founding elevations, it is found that conditions do not meet the requirements set forth in the *Contract Documents*. No extras will be paid if footings are lowered due to construction activity, over excavation, or through undermining by the installation of electrical and mechanical services.
10. Use hand methods to carry out final trimming of footing beds, prior to placement of reinforcement and concrete. Accurately level the bottom of footing excavations.
11. Remove water, disturbed soil or foreign matter from footing excavations before placing reinforcement or concrete.
12. Footings are not to be concreted until the soil at founding elevation is inspected and approved by the geotechnical engineer.

3.3 Backfilling

1. Do not commence backfilling until areas of *Work* to be backfilled have been inspected, and pipe and conduit joints tested and accepted by *Consultant*.
2. Areas to be backfilled shall be free from debris, snow, ice, water or frozen ground. Backfill material shall not be frozen or contain ice, snow or debris.
3. Prior to placing fill under slabs on grade, compact existing subgrade to obtain same compaction, as specified for fill. Remove “soft” material and fill with approved material.
4. Prior to installation of foundations compact existing subgrade to obtain bearing capacity. Remove soft material and fill with approved material.
5. Backfill simultaneously each side of walls and other structures to equalize soil pressures.
6. Request reviews by *Consultant* and geotechnical engineer of excavation prior to beginning backfilling.
7. Obtain Consultant’s acceptance prior to placing backfill against basement walls.
8. Where temporary unbalanced earth pressures are liable to develop on walls or the structures, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Architect.
9. Place and compact fill materials in continuous horizontal layers not exceeding 200 mm loose depth. Do not disturb or damage buried services, drainage system, waterproofing and dampproofing. Make good any damage.
10. Do not use frozen material for backfilling or filling.

3.4 Fill Locations & Compaction

1. **Type 1 Fill:**
 - .1 Use under interior concrete slabs on grade to a minimum compacted depth of 200 mm.
 - .2 Use under all exterior concrete slab on grade to a minimum compacted depth of 150 mm.
 - .3 Compact to at least 100% standard proctor maximum dry density.
2. **Type 2 Fill:**
 - .1 Use within building area, in trenches, pits and fill for over-excavated areas to underside of type 1 Fill.
 - .2 Compact to at least 100% standard proctor maximum dry density.
3. **Type 3 Fill:**
 - .1 Use under foundations where specified.

4. Type 4 Fill:

- .1 Use at exterior side of perimeter walls to subgrade level.
- .2 Use on backside of retaining walls to subgrade level on high side for minimum 500 mm from wall. Compact to 95% standard proctor maximum dry density.

5. Type 5 Fill:

- .1 Use at perimeter of building at weeping tile location, above type 2 fill, in landscaped areas prior to placing top soil – See Section 02411.

3.5 Grading

1. Rough grade to levels, profiles, and contours allowing for surface treatment as indicated. Under paved areas, subgrade must be properly shaped and crowned to provide drainage of the sub-base to the catch basins and to the sub-drainage system. Cross fall to be 2% minimum.
2. Slope rough grade away from building 1:50 minimum.
3. Grade ditches to depth required for maximum run-off.
4. Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Moisture content of fill and existing surface to be approximately the same to facilitate bonding.
5. Compact filled and disturbed areas to standard proctor maximum dry density to ASTM D698-78 as follows:
 - .1 95% under landscaped area.
 - .2 100% under paved and walk areas and under sports field.
6. Do not disturb soil within branch spread of trees or shrubs to remain.

3.6 Inspection & Testing

1. Refer to Section 01005, Paragraph 21.

3.7 Surplus Material

1. Dispose of surplus material from site.
2. Dispose of material unsuitable for fill, grading or landscaping from site.

End of Section

PART 1 - GENERAL

1.1 Related Work in Other Sections

1. Site Grading: Section 02210
2. Excavation, Backfilling and Rough Grading : Section 02220

1.2 Landscape Sub-Contractor's Work

1. The work of the following sections must be performed by one only subcontractor referred as the landscape sub-contractor.
 - Section 02260 Top Soil and Finish Grading
 - Section 02487 Sodding
 - Section 02490 Trees, Shrubs and Groundcovers

1.3 Quality Assurance

1. Should the source of topsoil be exhausted, test topsoil from new source, submit soil analysis report and recommendations for correction and obtain the approval from the Consultant before using.
2. Obtain approval of the topsoil in writing from the Consultant.
3. Test topsoil for NPK, Mg, Soluble salt content, organic matter, pH and permeability.
4. Submit 2 copies of the soil analysis report and recommendations for correction to the Consultant.

1.4 Product Delivery, Storage and Handling

1. Stockpile topsoil in locations designated by the Consultant.
2. Do not spread topsoil in a frozen or muddy condition.

1.5 Site Conditions

1. Should the source of topsoil be exhausted, test topsoil from new source, submit soil analysis report and recommendations for correction and obtain the approval from the Consultant before using.
2. Prevent damage to existing buildings, sidewalks, pavement, utility lines, servicing and other existing structures which are to remain.
3. Do not bury foreign material beneath areas to be landscaped. Dispose of debris prior to topsoil placement and remove from the site.

1.6 Product Delivery, Storage and Handling

1. Stockpile topsoil in locations designated by the Consultant.

2. Do not spread topsoil in a frozen or muddy condition.

PART 2 - PRODUCTS

2.1 Materials

1. Topsoil: From stockpile stripped from site.
2. Imported Topsoil: A fertile, friable natural loam; containing not less than 4% organic matter for lay loams and not less than 2% organic matter for sandy loams to a maximum of 15%, and capable of sustaining vigorous plant growth, free of subsoil contamination, roots and stones over 50mm in diameter, reasonably free of weeds (as determined by the Consultant), and having a pH ranging from 6.0 to 7.5.

PART 3 - EXECUTION

3.1 Preparation

1. All subgrade shall be approved by the Consultant before the placement of topsoil.
2. Fine grade the subgrade eliminating uneven areas and filling low spots. Remove all debris and all subsoil that has been contaminated with oil or gasoline.
3. Compact finished subgrade to 95% Standard Proctor Dry density for areas under sod or planting.
4. Scarify subgrade to a depth of 100mm.
5. Topsoil to be compacted to a firmness sufficient to show a heel imprint of not more than 3mm deep. The top 50mm of topsoil shall be of a fine texture suitable for placement of sod.
6. Manually spread topsoil around trees and plants to prevent damage by grading levelling equipment.
7. Float the area until surface is smooth. Cut smooth falls to catch basin rims and finish up flush.
8. Do not cover catch basins, valve covers or inspection pits
9. Fine grade the topsoil to ensure positive drainage away from buildings and sidewalks; provide positive drainage from curb edges.
10. Leave surface smooth, uniform and sufficiently firm to prevent sinkage pockets when irrigated.
11. Obtain approval of topsoil grading prior to the placing of plant material or sod.

3.2 Spreading of Topsoil

1. Spread dry topsoil during dry weather over approved, dry, unfrozen subgrade where sod is indicated.
2. Keep topsoil 20mm below finished grade for sodded areas.
3. Apply topsoil to the following minimum compacted depths:
150mm for seeded areas
150mm for sodded areas
450mm for flower beds
600mm for shrub beds
4. Fine grade topsoil eliminating rough and low areas and to ensure positive drainage.
5. Roll topsoil with a 50kg roller to compact and retain surface. Compact to 85% SPD

3.3 Raking-Out

1. Hand rake areas as a final surface preparation.
2. Coordinate the scheduling of hand raking to ensure that sodding can occur as soon as possible after hand raking.

3.4 Clean-Up

1. Make good any damage caused by topsoil spreading activities at no extra cost.
2. Clean up immediately any soil or debris spilled onto pavement or concrete.

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

- | | |
|---------------------------------|---------------|
| 1. Site Grading: | Section 02210 |
| 2. Topsoil and Finish Grading : | Section 02260 |

1.2 Landscape Sub-Contractor's Work

1. The work of the following sections must be performed by one only subcontractor referred as the landscape sub-contractor.
 - Section 02260 Top Soil and Finish Grading
 - Section 02487 Sodding
 - Section 02490 Trees, Shrubs and Groundcovers

1.3 Quality Assurance

1. Laying of sod to be carried out by experienced personnel under the direction of a skilled foreman.

1.4 Delivery & Storage

1. Schedule deliveries in order to keep storage at jobsite to minimum without causing delays.
2. Deliver, unload and store sod on pallets.
3. Deliver sod to site within 24 h of being lifted and lay sod within 36 h of being lifted.
4. Do not deliver small, irregular or broken pieces of sod.
5. During wet weather allow sod to dry sufficiently to prevent tearing during lifting and handling.
6. During dry weather protect sod from drying and water sod as necessary to ensure its vitality and prevent dropping of soil in handling. Dry sod will be rejected.

1.5 Scheduling of Work

1. Schedule placing of topsoil and finish grading to permit sodding immediately.

1.6 Inspection

1. Obtain approval of the Consultant of the finish topsoil surface before proceeding with sodding.

PART 2 - PRODUCTS

2.1 Materials

1. **Nursery Sod:** Quality and source to comply with standards outlined in "Guide Specification for Nursery Stock," Section 17, 1978 Edition, published by Canadian Nursery Trades Association.
 - .1 Number one (#1) Kentucky Bluegrass/Fescue Sod: Sod grown from minimum 40% Kentucky Bluegrass, 30% Creeping Red Fescue.
2. **Water:** Potable.
3. **Herbicide:** Standard commercial (Canada Pest Control Products Act).
4. **Fertilizer:** Complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen. Formulation ratio 20-10-10 brand name fertilizer for application during maintenance period.
5. **Topsoil:** For sodding and seeding, use existing topsoil stockpile as specified in Section 02111. Provide additional imported topsoil if required at no extra cost and as specified under Section 02490.
6. **Wooden Pegs:** 17 mm x 17 mm x 200 mm.

PART 3 - EXECUTION

3.1 Application of Fertilizer

1. Apply fertilizer before sodding.
2. Spread fertilizer with mechanical spreaders over entire area of topsoil at rate of 16 kg (100 m²) or area.
3. Mix fertilizer thoroughly into upper 50 mm of topsoil.

3.2 Finish Grading

1. Fine grade entire topsoil area to contours and elevations. Eliminate rough spots and low areas to ensure positive drainage.
2. Roll topsoil with 50 kg. roller, minimum 900 mm wide to compact and retain surface.
3. Leave surface smooth, uniform, firm against deep foot printing, with a fine loose texture.

3.3 Laying of Sod

1. Obtain approval of topsoil grade and depth before starting sodding.

2. Lay sod during growing season. Sodding during dry summer period, at freezing temperatures or over frozen soil is not acceptable.
3. Lay sod in rows, perpendicular to slope, smooth and even with adjoining areas, and with joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with a sharp knife.
4. Provide close contact between sod and soil by means of light roller. Heavy rolling to correct irregularities in grade is not permitted.
5. Water immediately after sod laying to obtain moisture penetration through sod into top 100 mm of topsoil.
6. Provide adequate protection of sodded areas against erosion and mechanical damage. Remove protection after lawn areas have been accepted.
7. For slopes greater than 3:1 lay sod sections at right angles to slopes and secure with wooden pegs. Place 6 pegs per m², 100 mm below top edge and to prevent shifting of sod and drive pegs flush with top of sod soil.
8. Lay pieces of sod in turf stone apertures.

3.4 Maintenance

1. Ensure maintenance equipment suitable to Consultant.
2. Water sodded areas in sufficient quantities and at required frequency to maintain sub-soil immediately under sod continuously moist for depth of 75 to 100 mm.
3. Cut grass first time when it reaches height of 40 to 50 mm. Remove clippings which will smother grassed areas.
4. Mow grass once a week (every seventh day) during the growing season at a height of 60 mm.
5. Trim grass edges around planting beds, building walls, light standards, signs, trees, etc., in neat lines as to original layout.
6. Keep sodded areas clean, pick up all debris, papers, excess construction materials or similar materials from all sodded areas and remove from site.
7. Apply herbicide when broad-leaf weeds start developing in competition with grass. Apply herbicide in accordance with manufacturer's instructions when winds are less than 10 km/h, when air temperature is above 10 deg. C.
8. Beginning in early April, fertilize sodded areas with fertilizer for four (4) successive months with a complete slow release fertilizer. Formulation ratio 20-10-10, brand name fertilizer at a rate of 300 lbs/acre.

3.5 Acceptance

1. It is the Contractors responsibility to maintain the sod in good condition until accepted.
2. Sodded areas will be accepted at final inspection provided that:
 - .1 Sodded areas are properly established.
 - .2 Sod is free of bare and dead spots and without weeds.
 - .3 No surface soil is visible when grass has been cut to height of 45 mm.
 - .4 Sodded areas have been cut twice.
3. Lawns sodded in fall will be accepted in following spring one (1) month after start of growing season provided acceptance conditions are fulfilled.
4. Replace any deteriorated sod with new sod at the direction of the Consultant.

End of Section

PART 1 - GENERAL

1.1 Source Quality Control

1. The work of the following sections must be performed by one only subcontractor referred as the landscape sub-contractor.
 - Section 02260 Topsoil and Finish Grading
 - Section 02487 Sodding
 - Section 02490 Trees, Shrubs and Groundcovers
2. Obtain approval of plant material at source.
3. Notify consultant of source of material at least seven days in advance of shipment. No work under this section is to proceed without approval.
4. Acceptance of plant material at its source does not prevent rejection on site prior to or after planting operations.
5. Imported plant material must be accompanied with necessary permits and import licenses. Conform to Federal and Provincial regulations.

1.2 Shipment and Pre-Planting Care

1. Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
2. Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire which would damage bark, break branches or destroy natural shape of plant. Give full support to root ball of large trees during lifting.
3. Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
4. Remove broken and damaged roots with sharp pruning shears.
5. Keep roots moist and protected from sun and wind. Heel-in trees and shrubs, which cannot be planted immediately, in shaded areas and water well.

1.3 Guarantee

1. The contractor hereby warrants that plant material as itemized on plant list will remain free of defects for one year.
2. End-of-Warranty inspection will be conducted.

1.4 Replacements

1. During warranty period, remove from site any plant material that has died or failed to grow satisfactorily as determined by consultant.
2. Replace plant material as soon as horticulturally acceptable.
3. Extend warranty on replacement plant material for a period equal to the original warranty period.
4. Continue such replacement and warranty until plant material is acceptable.

PART 2 - PRODUCTS

2.1 Materials

1. Water: potable and free of minerals, which may be detrimental to plant growth.
2. Stakes: T-bar steel stakes 50 x 50 x 6 x 2440 mm, wood 50 x 50 x 2400 mm.
3. Accessories: factory galvanized, cables, wire tighteners.
4. Guy wires: steel wire strand to CSA G4-M1977 at the following sizes:
 - .1 Shrubs and trees under 77 mm caliper use 2.4 mm wire.
 - .2 Trees 75 to 150 mm caliper use 3 mm wire.
5. Tree rings: fabricated from 3 mm galvanized wire encased in two ply reinforced 12 mm diameter rubber garden hose or equivalent.
6. Root ball burlap: 150 g Hessian burlap.
7. Wire baskets: to be ungalvanized metal.
8. Mulch: Submit samples prior to shipping to site:
 - .1 Shredded bark mulch.
9. Topsoil:
 - .1 For tree pits, planters, and shrub beds to be imported triple mix.
10. Antidesiccant: wax like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.

2.2 Plant Material

1. Conform to the horticultural standards of the Canadian Nursery Trades Associations with respect to grading and quality. Supplied in strict accordance with Plant List.
2. All plants shall be No. 1 Grade, nursery grown, under proper cultural practices with respect to fertile soil, ample spacing, regular cultivation, weed, pest control, adequate moisture and pruning, in accordance with good horticultural practices as advocated by the Canadian Nursery Trades Association. All such plants shall have been transplanted and/or root pruned regularly, but not later than nine (9) months prior to arrival on the site. The Contractor shall submit sources of plant material, in writing, if so requested by the Consultant.
3. Additional plant material qualifications:
 - .1 Plant material obtained from areas with milder climatic conditions from those of site acceptable only when moved to site prior to the breaking of buds in their original location and heeled-in, in a protected area until conditions suitable for planting.
 - .2 Use trees and shrubs with strong fibrous root system free of disease, insects, defects of injuries and structurally sound. Use trees with straight trunks, well and characteristically branches for species. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
 - .3 Cold storage: written approval from the consultant required for use of plant material which has been held in cold storage.
 - .4 Container grown stock: acceptable if containers large enough for root development. Trees and shrubs must have been grown in container for minimum of one growing season but not longer than two. Root systems must be able to "hold" soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
 - .5 Balled and burlapped: coniferous and broad-leafed evergreens over 500 mm tall must be dug with soil ball. Deciduous trees in excess of 3 m height must have been dug with large ball. Root balls must include 75% of fibrous and feeder root system. Secure root balls with burlap and heavy twine, rope or wire basket.
 - .6 Collected plant material: will not be permitted.
 - .7 Substitutions to plant material as indicated on planting plan not permitted unless written approval has been obtained as to type, variety and size. Plant substitutions must be of similar species and or equal size as those originally specified. Give timely notice, in writing, to the Consultant when applying for substitutions.

PART 3 - EXECUTION

3.1 Workmanship

1. Stake out location of trees and planting beds as per planting plan. Obtain approval prior to excavating.

2. Apply antidesiccant in accordance with material manufacturer's instructions.
3. Coordinate operations. Keep site clean and planting holes drained. Immediately remove soil or debris spilled on pavement.

3.2 Planting Time

1. Plant deciduous plant material during dormant period before buds have broken. Plant material noted for spring planting only, must be planted in dormant period.
2. Plant material imported from region with warmer climate conditions may only be planted in early spring.
3. When permission has been obtained to plant deciduous plant material after buds have broken, spray plants with antidesiccant to slow down transpiration prior to transplanting.
4. Plant evergreens in spring before bud break. Apply antidesiccant to evergreens before digging.
5. When permission has been obtained, trees, shrubs and ground covers growing in containers may be planted throughout growing season.
6. Plant only under conditions that are conducive to health and physical conditions of plants.
7. Provide planting schedule. Extending planting operations over long period using limited crew will not be acceptable.

3.3 Excavation

1. Shrubs: excavate planting beds 450 mm deep and the full extent of bed areas as shown on plans. Dispose of excavated material off site.
2. Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
3. Protect bottom of excavation against freezing.
4. Remove water which enters excavations prior to planting. Ensure source of water is not ground water.

3.4 Planting

1. Loosen bottom of planting hole to depth of 150 to 200 mm.
2. Plant trees and shrubs vertically with roots placed straight out in hole. Orient plant material to give best appearance in relation to roads and walks.

3. With balled and burlapped root balls, loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non-biodegradable wrappings must be removed.
4. Place plant material to depth equal to depth they were originally growing in nursery.
5. During planting of bare-rooted stock, first shake backfill of planting soil among the roots.
6. Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.
7. Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering.
8. When planting is complete, give surface of planting saucer dressing of organic 1:2:2 fertilizer at rate of 12 kg/100 m² for shrub beds or 40 to 50 g/mm of caliper for trees. Mix fertilizer thoroughly with top layer of planting soil and water in well.

3.5 Protective Wrapping

1. Protective wrapping installed by the nursery to prevent damage during shipping is to be removed upon planting to allow for inspection of the trunk.

3.6 Tree Support

1. Tree support is shown on planting details.
2. Where guy wires are used close to pedestrian ways fasten flags to wires to make them clearly visible.

3.7 Pruning

1. Prune trees and shrubs after planting, as directed, to compensate for loss of roots suffered during transplanting. Postpone pruning, of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main branch, smooth dead and injured branches and branches that rub causing damage to bark. Trim out crown of trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

3.8 Mulching

1. Obtain approval of planting beds before mulching material is applied. Loosen soil in planting beds and pits and remove debris and weeds. Spread mulch to minimum thickness of 50 mm. Mulch material susceptible to blowing must be moistened and mixed with topsoil before applying. When mulching is placed in fall, place immediately after planting. When mulch is placed in spring, wait until soil has warmed up.

3.9 Maintenance Before Acceptance

1. Perform following maintenance operations from time of planting to acceptance by Consultant:
 - .1 Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
 - .1 For evergreen plant material, water thoroughly in late fall prior to freeze-up to saturate soil around root system.
 - .2 Remove weeds monthly.
 - .3 Replace or respread damaged, missing or disturbed mulch.
 - .4 For non-mulched areas, cultivate as required to keep top layer of soil friable.
 - .5 Apply pesticides in accordance with Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from Consultant prior to application.
 - .6 Remove dead or broken branches from plant material.
 - .7 Keep trunk protection and guy wires in proper repair and adjustment.
 - .8 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
 - .9 Be responsible for protection of all planted areas, until all project work has been completed, approved and accepted.

3.10 Acceptance

1. Plant material will be accepted no sooner than the date at which the project is declared fit for occupancy provided that the following criteria are met:
2. Plant material has been planted for 90 days, exhibits healthy growing condition and is free from disease, insects and fungal organisms.
3. Plant material installed less than 90 days prior to frost will be accepted in following spring, 30 days after start of growing season provided that acceptance conditions are fulfilled.
4. All plant material will be inspected prior to acceptance. All plants must be in a healthy, vigorous, growing condition at time of inspection. All planting beds and tree pits shall be mulched, free of weeds, leaves, broken branches and debris, and in a neat and tidy condition.

End of Section

PART 1 – GENERAL

1.1 Summary

1. Provide all labor, materials, equipment, and tools necessary for the complete installation of synthetic grass surface. The system shall consist of, but not necessarily be limited to, the following:
 - .1 Synthetic grass consisting of fibers that are a minimum of 39mm (1.54 inch) long. Turf fiber construction consisting of polyethylene monofilament and either texturized monofilament fibers tufted to a 2-layer stabilized woven polypropylene fabric (primary backing), with a non-urethane, 100% recyclable secondary backing (stitch binder) by AGL (Artificial Grass Limited). AGL (Artificial Grass Limited) synthetic turf or equivalent).
 - .2 Synthetic Grass Infill, consisting of anti-microbial acrylic coated round silica particles, designed to provide the look, feel, and performance of optimally maintained natural grass by AGL (Artificial Grass Limited) or equivalent.

1.2 Related Sections

1. Excavation, Backfilling and Rough Grading Section 02220

1.3 Submittals

1. Comply with Section 01340 for submittal procedures.
2. Product Data: Submit manufacturer's product data, including installation instructions and subsurface instructions.
3. Warranty: Submit manufacturer's standard 9 year warranty from fade.

PART 2 – PRODUCTS

2.1 Synthetic Grass Surface

1. Synthetic Grass Surface to be Artificial Grass Limited -AGL grass Saratoga 60 with 1.5 lbs cryogenic rubber infill as supplied by Artificial Grass & Landscaping Inc. Construct base with 55mm limestone screening on 150mm crushed stone compacted to 95%.
2. Synthetic grass: 45mm (1.75 inches) by AGL (Artificial Grass Limited) or approved equal.
 - .1 Face Weight Minimum 50 oz/sy
 - .2 Face Yarn Type: Polyethylene
 - .3 Yarn Size 10800/7300
 - .4 Pile Height: 1.75 inches
 - .5 Color: Blend
 - .6 Construction: Broadloom tufted

- .7 Tufting Gauge: 6mm (1/4")
 - .8 Primary Backing: Stabilized dual layered woven polypropylene
 - .9 Secondary Backing 10.0 oz. DuraFlo (non-urethane, 100% recyclable)
 - .10 Total Product Weight 69.7 oz/sy
 - .11 Finished Roll Width 180" untrimmed
 - .12 Warranty: 9 year fade
3. Splicing Material: 1000 denier coated nylon 305mm (12") wide minimum.
 4. Adhesive: Synthetic Turf Adhesive as recommended by manufacturer.

PART 3 – EXECUTION

1.1 Ground Preparation

1. General: The ground area to receive synthetic grass surface is indicated on the Drawings.
2. Leveling and Site Preparation: All organic material and organic debris to be removed. Soil to be graded level and stabilized (compacted). Compaction shall be done with mechanical compactors, including vibratory compactors, and/or powered tampers, and rollers.

1.2 Base and Synthetic Grass Construction

1. General: The area to be smooth and graded to allow proper drainage. Refer to grading plan.
2. Compacted Aggregate Base: Place 100mm (4 inches) of aggregate base as leveling layer compacted to 90% of max density per AASHTO T99. Compaction shall be done with mechanical compactors, including vibratory compactors, and/or powered tampers, and rollers. Aggregate size should be 19mm (3/4") minus (compactable).
3. Synthetic Grass: Place turf and cut to fit configuration as shown on Drawings. Splice seams. All seams must be attached with splicing film/fabric and adhesive as approved by the manufacturer for this type of installation of their product.
4. Infill: Apply layers of synthetic grass infill evenly with a spreader and broom the turf fibers with stiff bristle broom to stand fibers up and allow infill to settle into the bottom. Broom in infill round quartz silica sand approximately 3 pounds per square foot.
5. Anchoring/Edging: Edges of turf will be secured to ground with mechanical fasteners, stakes or edging.

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1. Site Grading: Section 02210
2. Excavation, Backfilling and Rough Grading: Section 02220
3. Cast-in-Place Concrete: concrete curbs refer to structural drawings

1.2 Extended Warranty:

1. Submit a warranty for asphalt paving installation, covering materials and labour and the repair or replacement of defective work, but for two (2) years total.

PART 2 - PRODUCTS

2.1 Materials

1. **Sub-Base:** Generally, use Fill type "4" where required to reach design elevations.
2. **Base:** 50 mm and 19 mm crusher run limestone.
3. **Heavy Duty Pavement for Parking and Driveways:** Hot mix, hot laid asphaltic concrete HL8 and HL3, mixture conforming to O.P.S.S. #1150.05.
4. **Medium Duty Pavement for Playground and Walkways:** Hot mix, hot laid asphaltic concrete HL8 and HL3, mixtures conforming to O.P.S.S. #1150.05.
5. **Joint Painting Material:** SS-1 emulsion in accordance with O.P.S.S. #1103.05.

PART 3 - EXECUTION

3.1 Preparation

1. Regard locations and instructions on drawings. Report any discrepancies or questions to the Consultant prior to proceeding with the work. In particular pay attention to the exact delineation of all edges of pavement and types of pavement;
2. Set out work in accordance with lines and levels shown on Drawings. Maintain such lines and levels through duration of work. Ensure positive drainage toward catch basins is maintained in all areas.
3. Compact sub-grade to a minimum of 98% Standard Proctor density.
4. Paint exposed edge of asphaltic joints, edge of manhole and catchbasin frames, curbs and similar items with SS-1 emulsion.

3.2 Installation

1. Inspect site grades prior to installation. Review the precise grade requirements required on the grading plan. Review with the Consultant prior to installation if any conditions exist that may cause deviations from grades shown on Drawings. Coordinate catchbasin elevations with those shown on Mechanical site plan.
2. **Pavement Section:**
 - .1 **Heavy Duty:**
 - minimum 300 mm compacted thickness of 50 mm crusher run limestone compacted to 100% Standard Proctor Maximum Dry Density (SPMDD), ASTM-D698 .
 - 150 mm compacted thickness Base course of 19 mm crusher run limestone compacted to 100% SPMDD.
 - 60 mm compacted thickness of granular asphalt HL8.
 - 40 mm compacted thickness of granular asphalt HL3.
 - .2 **Medium Duty:**
 - 200 mm compacted thickness of 50 mm crusher run limestone Sub-Base compacted to 100% Standard Proctor Maximum Dry Density (SPMDD), ASTM-D698.
 - 150 mm compacted thickness Base course of 19 mm crusher run limestone compacted to 100% SPMDD.
 - 40 mm compacted thickness of granular asphalt HL8.
 - 30 mm compacted thickness of granular asphalt HL3.
3. **Placing Granular Materials:**
 - .1 Exercise due care at all times to prevent granular materials from being contaminated by clay or other types of deleterious materials.
 - .2 Place materials immediately after sub-grade is inspected by the Architect and as follows:
 - .1 To required width and thickness indicated on Drawings in layers not exceeding 100 mm compacted thickness crusher run limestone.
 - .2 Grade each layer and compact to a minimum 100% standard Proctor density to a smoother surface conforming to required cross-section.
 - .3 Finished surface of granular material must not deviate more than 10 mm from designed grade.
4. **Placing Asphaltic Pavement:**
 - .1 Obtain Consultant's inspection of compacted granular base before commencing asphalt paving.
 - .2 Air temperature during placing of mixture must be minimum 7 deg. C and rising. Temperature of mixture when spread must be not less than 120 deg. C nor more than 150 deg. C. Do not increase temperature of mixture to offset long distance hauling.
 - .3 Compact asphaltic mixture as soon as it can bear roller without undue displacement and hairline cracking and continue until all roller marks are eliminated. Speed of roller must at all times be slow enough to avoid displacement

of mixture. Keep roller wheels slightly moistened by water to prevent adhesion of mixture. Excess water will not be permitted. Compact mixture with hot tampers in locations that are not easily accessible to machine roller.

.4 Rolling Procedure:

- .1 Initial and final rolling must be accomplished using self-propelled Class "B" roller.
- .2 Intermediate rolling must be carried out using self-propelled Class "C" roller or "D" roller. Intermediate roller must follow breakdown roller as closely as possible.

.5 Upon completion of compaction each pavement course must be:

- .1 Smooth and true to crown and grade with variation not more than 6 mm from thickness shown on Drawing. Do not place any asphaltic course less than 25 mm thick nor more than 75 mm thick.
- .2 Free from depressions exceeding 3 mm as measured with 3 m straight edge paralleling centre line of driveways/aisles.
- .3 Compacted to a density not less than 97% Marshall.

5. Joints:

- .1 Cut back bituminous course to its full depth in straight or curved lines as required to expose fresh, straight, vertical surface. Remove broken and loose material.
- .2 Asphalt must be placed in such a manner that joint must not be allowed to cool before adjacent asphalt course is applied.
- .3 Where paving is comprised of two or more courses, joints must overlap by not less than 600 mm.
- .4 Carefully place and compact hot asphaltic material against joints. Correct any unsatisfactory joint before proceeding with work.
- .5 Feathering of joints will not be permitted.

3.3 Inspection & Testing

1. Refer to Section 01005.
2. Field inspections during installation, and core samples of all asphalt areas will be taken as part of Inspection and Testing. If tests show asphalt to be substandard to that specified, all asphalt shall be removed and replaced at the Contractor's expense. Cash credits will not be accepted for work which does not fully comply with drawings and specifications.

3.4 Certification of Grades

1. The Contractor is required to provide as-constructed elevations of the parking area to verify that the parking lot has been constructed in accordance with the contract drawings.

3.5 Pavement Markings

1. **Parking Spaces:**

- .1 Lay out lines as indicated on drawings and apply 100mm yellow - wide for parking, use mechanical application equipment.
 - .2 End limit of each line to have clean, sharp 90° corners with no over spray fogging.
 - .3 Thickness of paint application to be consistent throughout.
 - .4 Under-sprayed lines shall be repainted.
- 2. Handicapped Symbols, as indicated on the Drawings, and as follows:**
- .1 1200mm x 1200mm- White symbol in blue box.
- 3. Emergency Fire Route Markings:**
- .1 Lay out lines as indicated on drawings and apply.

End of Section

PART 1 - GENERAL

1.1 General Requirements

1. Division One, General Requirements is part of this Section and shall apply as if repeated here.

1.2 Scope of Work

1. The work specified under this Section includes all labour, materials and equipment necessary for the complete repair and supply, installation and erection of the following:
 - .1 Chain link fence, all posts, top posts and foundations;
 - .2 Brace Units;
 - .3 Fence gates.

1.3 Description

1. Fencing shall be prepared and installed in accordance with the manufacturer's instructions and according to the details and in the locations shown on the Drawings.

1.4 Qualifications

1. Welding shall be undertaken by Fabricators fully approved by the Canadian Welding Bureau to qualification requirements of CSA W 47.1-1973.

1.5 Delivery, Storage and Handling

1. Provide adequate and suitable facilities for storage and protection of fencing and be responsible for any loss of, or damage to, when handling and delivering.

1.6 Shop Drawings

1. Submit Shop Drawings and/or Catalogue Illustrations in accordance with Section 01340.

PART 2 - PRODUCTS

2.1 Materials

1. Fencing: chain-link fencing fabric, posts, hardware, etc. to be supplied from one manufacturer as a complete, coordinated system. Black vinyl coated. Typical all members.
 - .1 Acceptable material: Frost Fence or equal.
2. Concrete mixes and materials:
 - .1 To CAN3-A23.1-M77.
 - .2 Compressive Strength: 20 Mpa minimum at 28 days.

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- .3 Footings: 250 mm minimum diameter - 1200 mm minimum depth at line posts, 1500 mm minimum depth at terminal or gate posts.
 3. Chain-link fence fabric: to CGSB/CAN2-138.1-M80.
 - .1 Woven steel wire fabric as follows:
 - .1 Mesh Size: 38 mm x 38 mm
 - .2 Wire Gauge: 9 gauge
 - .3 Top and Bottom Selvage: "Twisted and Knuckled" (TK)
 - .4 Height of Fabric: Refer to drawings height and for locations.
 - .2 Wire to be treated and finished as follows:
 - .1 Galvanized
 4. Posts and rails: to CGSB/CAN2-138.2-M80+Amdt-June-82, galvanized steel pipe to ASTM A120 Schedule 40. Pipe sizes as follows:
 - .1 Terminal, Corner and Gate Posts: 89 mm (3-1/2 in) diameter.
 - .2 Line Posts: 60 mm (2-1/2 in) diameter.
 - .3 Top Rail, Gate Frames, Brace Rails, Bottom Rail: 43 mm (1-11/16 in) diameter.
 5. Tie wire fasteners: single strand, vinyl coated steel wire conforming to requirements of fence fabric, 9 gauge.
 6. Tension bar: 5 x 20 mm minimum size galvanized steel.
 7. Tension bar bands: 3 x 20 mm minimum size galvanized steel or 5 x 20 mm minimum size aluminum.
 8. Fittings and hardware: cast aluminum alloy, galvanized steel or malleable or ductile cast iron. Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail (line posts). Turnbuckles to be drop forged. Use black painted or vinyl coated fittings at all locations.
 9. Zinc-Rich Pigmented Paint: to CGSB 1-GP-178Ma: Black.

2.2 Finishes

1. Galvanizing:
 - .1 For chain-link fabric: to CAN/CGSB-138.1-M80 Grade 2.
 - .2 For pipe: 550 g/m² minimum to ASTM A90-81.
 - .3 For other fittings: to CSA G164-M1981.

2.3 Gates

1. Swing Gates: 43 mm (1-11/16 in): Schedule 40 pipe for frame, welded construction to produce rigid frame. Provide gate hardware including latch mechanism to take padlock by others. Provide centre ground stay and receptacle for pairs of gates. All gates to be industrial quality, galvanized after fabrication, vinyl coated.

2.4 Fabrication

1. Wire fabric shall be woven into 38 mm mesh with top of fabric barbed and bottom knuckled. Fabric shall be hot-dip galvanized after weaving. Black vinyl coated.
2. All posts to be complete with necessary fittings and hardware.
3. Gate frames and braces shall be electrically welded at all joints and hot-dip galvanized after welding, and complete with malleable iron hinges, latch and latch catch.
4. Gate latches are to be designed such that padlock can be attached and operated from either side of gate.
5. Double gates are to have centre rest with drop bolt for closed position and chain hook to hold gates open.

PART 3 - EXECUTION

3.1 Erection

1. Line posts shall be spaced at 3,000 mm centres for fences 1,200 mm high and over, unless specifically indicated on drawings. Foundations for fence posts shall be 300 mm x 300 mm concrete, 1,200 mm deep below the lowest adjoining grade, with smooth tops domed above grade to shed water.
2. All terminal posts for fence to be horizontally braced with brace unit extending from terminal post to adjacent line post. Corner posts shall have two (2) brace units.
3. All posts shall be placed in a vertical plumb position and set accurately to line shown on Drawings.
4. The space between the ground surface and the bottom of the fabric shall not be less than 40 mm and not more than 80 mm.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Cast-In-Place Concrete: refer to structural drawings
2. Structural Metal Framing refer to structural drawings
3. Miscellaneous Metal Fabrication: Section 05500
4. Air Vapour Barrier Membrane: Section 07112
Note: in order to maintain continuity and quality control, the supply and installation of the full project scope of vapour barrier membrane is to be carried by a single trade.
5. Building Insulation: Section 07212
6. Mix Specified for Filling Blocks: refer to structural drawings

1.2 Reference Standards

1. CSA-S304.1-04 Design of Masonry Structures
2. CSA- A370-04 (R2009) Connectors to Masonry.
3. CAN/CSA-A371-04 (R2009) Masonry Construction for Buildings.
4. CSA A179-04 (R2009) Mortar and Grout for Unit Masonry
5. CSA-A82-06 Fired Masonry Brick From Clay or Shale
6. CSA A165 Series-04 CSA Standards for Concrete Masonry Units.
7. CSA G30.18-09 Carbon Steel Bars for Concrete Reinforcement
8. CAN/CSA-A3000-08 Cementitious Materials Compendium
9. ASTM A951/A951M-06 Standard Specification for Steel Wire for Masonry Joint Reinforcement
10. ASTM C216-07a Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
11. ASTM C568-08a Standard Specification for Limestone Dimension Stone
12. ASTM A1064/A1064 Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
13. ASTM C331-05 Standard Specification for Lightweight Aggregates for Concrete Masonry Units
14. ASTM A153/A153M-09 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

1.3 Source Quality Control

1. Submit laboratory test reports certifying compliance of masonry units (and mortar ingredients) with specification requirements.
2. For clay units, in addition to requirements set out in referenced CSA and ASTM Standards include data indicating initial rate of absorption for units proposed for use.
3. All masonry: mortar and grout is to be tested in accordance with CSA-S304.

1.4 Product Delivery, Storage and Handling

1. Ensure that materials are delivered to job site in dry condition.
2. Except where wetting of bricks is specified, keep materials dry until use.
3. Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.
4. Store cement under cover. Keep dry and unfrozen.
5. Pile sand on platforms. Exclude foreign matter.
6. Materials stacked on floors of building shall not exceed structural design loads.

1.5 Cold Weather Requirements

1. Comply with Clause 6.7.2 of CSA-A371.

1.6 Hot Weather Requirements

1. Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

1.7 Protection

1. Until completed and protected by flashings or other permanent construction, keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain.
2. Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
3. Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.
4. When air temperature has dropped below 0 degrees C (eg. Overnight), ensure that materials are above freezing and free from ice when installed.

5. Prevent work from freezing for at least 48 hours by enclosure, artificial heat, or other acceptable method.
6. Provide adequate bracing to walls during erection to prevent damage due to winds or other lateral loads.
7. Make good any damage to masonry work until completion of the work.
8. Build masonry in enclosures heated by approved smokeless means, when temperature remains below 0 degrees C. All materials shall be above 4 degrees when installed.
9. Demolish and replace masonry work damaged by freezing.
10. Supplement CSA-A371 as follows:
 - .1 Maintain temperature of mortar between 5° C and 50° C until used.

1.8 Job Mock-up

1. Construct mock-up panel of exterior and interior masonry wall construction 2 m x 2 m showing masonry colours and textures, use of reinforcement, ties, through-wall flashing, weep holes, jointing, coursing, mortar, application of membrane air vapour barrier, insulation and workmanship. Mock-up may be part of construction.

1.9 Submittals

1. Make submittals in accordance with Section 01340.
2. Submit samples of:
 - .1 Masonry units (each type).
 - .2 Veneer anchors.
 - .3 Masonry reinforcement.
 - .4 Mortar Colours.
 - .5 Each masonry accessory.

PART 2 - PRODUCTS

2.1 Materials

1. Concrete Masonry Units:

Must be "Bubble Cure" or autoclave process, modular metric size conforming to CSA Standard A165 series.

Normal Weight - H/20/A/M, S/20/A/M.

Lightweight - H/20/C/M, S/20/C/M.

Use normal weight in below ground floor elevation. Use light weight for all above grade walls. All exposed corners to have bullnose units. All block to be uniform in color, shade and texture. Special shapes as required.

2. Acoustical Concrete Masonry Units:

N/A

3. Architectural Concrete Masonry Units:

.1 **Block Type “BLK-1”** (Field colour) basis of design: Sandy Brown – split face veneer block by Day & Campbell. Bond Pattern: running bond. To match existing block field colour, final selection to be confirmed by Architect.

4. Manufactured Stone:

N/A

5. Clay Brick Masonry Units:

.1 **Brick Type “BRK-A”** (Field colour) basis of design: Osiana Matt – metric jumbo, by Canada Brick. Bond Pattern: 1/3 running. To match existing brick field colour, final selection to be confirmed by Architect.

.2 **Brick Type “BRK-B”** (Field/Accent colour) basis of design: Chateau Locas – metric jumbo, by Canada Brick.. Bond Pattern: 1/3 running. To match existing brick accent colour, final selection to be confirmed by Architect.

Acceptable Alternate by: Brampton Brick

6. Precast Stone Caps:

.1 N/A

7. Portland Cement:

.1 Type 10, in accordance with CSA A3001.

8. Masonry Cement:

.1 Type “S” and shall comply with CSA A3002.

9. Hydrated Lime:

.1 Type “S”, in accordance with CSA A179.

10. Aggregate:

.1 Fine grain aggregate, grading in accordance with CSA A179. When 6mm joints are specified, grain shall pass through a 1.18 mm sieve.

11. Water:

.1 Ensure that water contains no salts which may cause efflorescence.

12. Horizontal Masonry Reinforcing:

Welded truss type or ladder type, as specified from wire to ASTM A951, hot dipped galvanized after fabrication to ASTM A153-05, Class B2, minimum coating 457 G/m², wire size 4.76 mm diameter. Reinforcing as per the following:

- Single wythe walls Dur-O-Wal DW 100;
- Double wythe walls (up to 390 in width) Dur-O-Wal DW 120;
- Double wythe walls (greater than 390) Dur-O-Wal DW 220;
- Cavity Walls Blok-Lok- Blok truss II - BL37 to accommodate 95 mm cavity with 64 mm thick insulation. Use Blok-truss BL 30- or DW 100 if using Ferro slotted block ties. Similar reinforcing by Dur-O-Wal, Blok-Lok, and Hohmann & Barnard Inc. is acceptable.

13. Reinforcing Bars: billet steel to grade 400, deformed bars to CSA-G30.18.

14. Brick Ties:

- .1 Hook type box ties, 4.76 mm galvanized steel wire, to be used in conjunction with Block-Lok Block-Truss II BL 37 at concrete block back-up wall.
- .2 Ferro Slotted Rap-Ties 16 gauge sheet metal, hot tipped galvanized, with 4.76 mm hot tipped galvanized V-Ties – Use at concrete wall back-up, at wood parapet and where other ties are not practical.
- .3 Ferro slotted block ties, 16 gauge sheet metal, hot-dipped galvanized, with 4.76mm hot-dipped galvanized V-ties to accommodate 95 mm cavity with 64 mm thick insulation. To be used in conjunction with horizontal reinforcing as specified under paragraph 2.10.

15. Dampproof Course: Modified bitumen flashing membrane, Blueskin SA manufactured by Bakor, or approved equal.

16. Lateral Support Anchors:

.1 Vertical:

- .1 At intersection and abutting load bearing walls, use prefabricated corners and tees to match horizontal reinforcing.
- .2 At intersection of non-load bearing walls with load bearing or non-load bearing walls, use corrugated galvanized ties.
- .3 At wood parapet and similar conditions, use slotted Rap ties by Fero. Ensure ties extend a minimum of 50 mm into the brick or block outer wythe.
- .4 At connection with existing masonry, use joint stabilization anchors by Dur-O-Wall D/A 2200.
- .5 At control joints, use joint stabilization anchors by DUR-O-WALL D/A 2200.
- .6 At connection with steel structure use weld-on column assembly D/A 709 and D/A 701 by DUR-O-WALL. Supply welded anchor to steel trade for installation.

- .2 **Horizontal:** At underside of building structure use steel angles on both sides of partitions as specified in Section 05121 and detailed on structural drawings. Where not practical, use D/A 2200 joint stabilization anchors by DUR-O-WALL. Fasten to structure. Install at 800 mm O.C.

17. **Bolts and Anchors:** To CSA-A370.

18. **Natural Mortar:**

- .1 **Generally:** Use materials only as specified in CSA A179. Ensure that weather and aggregate used in mortar, other than in walls buried in earth, will not cause efflorescence.
- .2 **Mixes:** Mix mortars as specified in CSA A179 using the Proportion Specification.
- .3 **Mortar Types:**
 - .1 For masonry walls in contact with earth and bedding for bearing plates and lintels: Mortar Type "S".
 - .2 For load-bearing walls: Mortar Type "S".
 - .3 For brick: Mortar Type "N" (1:1:6) premixed "Betomix 1-1-6", portland cement, "S" type, hydrated lime as supplied by Daubois Inc., Jiffy Mortar Systems; Maxi-Mix 1-1-6 silo mortar; or approved equivalent. Mix on site with sand, water, and colour pigment.
 - .4 For all other masonry walls, use regular Type "N" mortar.
- .4 **Grout:** To CSA A179 Table 5.

19. **Colour Pigments:** Pigments constituted of ground colored natural aggregates or metallic oxide pigments, color by architect, the ratio of coloring agent/density of portland/lime shall not exceed 10%.

20. **Mortar Dropping Control Device:** "Mor-Control" manufactured by Dur-O-Wal or Mortar-Net.

21. **Weepholes:** 90 mm x 90 mm x 10 mm purpose made PVC, designed to drain cavities to prevent insects from entering. Colour to be chosen by Architect from manufacturer's full range.

22. Metal flashing at top of foundation wall and at exterior lintels: 24 gauge prefinished sheet metal with Stelco or Dofasco series 8000 finish – color to match brick. With self adhering membrane flashing at underside (Blue Skin SA).

PART 3 - EXECUTION

3.1 Workmanship

1. Build masonry plumb, level, and true to line, with joints in proper alignment.
2. Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.
3. Set out and build masonry work to the respective dimensions called for on the drawings. Build and lay the block true to line, and level, align vertical joints. Keep angles, reveals, etc. square and plumb.
4. Assume complete responsibility for dimensions of this work.
5. Construct masonry fire rated assemblies in accordance with tested design specifications.

6. Make all joints uniform, in line, square and plumb, with mortar compressed to form joints as specified.
7. Course units to bring wall to required elevations using even, uniform, horizontal and vertical joints of maximum 10mm thickness. Horizontal joints brick soldier coursing to suit adjacent running bond.
8. Check and co-ordinate location of all anchors, connections and built-in items.
9. Bond units at intersection of walls by horizontal prefabricated "tee" or corner reinforcing units.
10. Lay each solid unit in full bed or mortar. Fill vertical joints. Slushing of joints not permitted.
11. Base course to be solid concrete masonry units laid in full mortar bed.
12. Lay each hollow unit in full bed or mortar for face shells. Butter vertical joints full. When laying closure units, butter vertical units already in place instead of units being placed.
13. Lay exposed masonry units using blocks having square, unbroken edges and corners.
14. Tolerances:
 - .1 Variation from mean plane: 6 mm when measured with 3000 mm straight edge.
 - .2 Variation from plumb: 6 mm on any vertical line up to 6000 mm high.
 - .3 Variation in wall opening sizes: 6 mm maximum.
 - .4 Variation of building lines from plan: in any bay or 6000 mm maximum – 12 mm or in 1200 mm or more, 20 mm.
15. Lay out masonry units carefully so as to run as often as possible in full and half unit dimensions. All exposed ends shall match the finish of the faces.
16. All units cut around pipes, ducts, openings, etc. shall be accurately and neatly cut with a power carborundum wheel, and remaining voids shall be slushed full with mortar.
17. Make joints flush and smooth on both sides excepts where they are to be exposed to view. When exposed to view, tool the joints concave, unless otherwise noted.
18. Lay and set up all units carefully so that both faces of the walls are true and even. Do not use chipped or cracked units where exposed to view, even where the defect would not impair strength or durability.
19. Take particular care to keep cavities, weep holes, vents and exposed faces of all units free of mortar.

3.2 Tolerances

1. Clause 6.2 of CAN3-A371 applies except as follows: Walls to receive thinset ceramic tile: plumb within 1:600.

3.3 Exposed Masonry

1. Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

3.4 Jointing

1. Concave joints, allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, compressed, uniformly concave joints.
2. Raked joints, where split rib blocks are used, allow joints to set just enough to remove excess water, then rake joints uniformly to depth of rib and compress with square tool to provide smooth, compressed, raked joints of uniform depth.
3. Where joints are concealed in walls and where walls are to receive plaster, tile insulation, or other applied material, except paint or similar thin finish coating, strike flush.

3.5 Weepholes

1. Install weepers at regular intervals at both top and bottom of walls as indicated on Drawings. Ensure weepers are clear and unblocked mortar.

3.6 Joining of Work

1. Where necessary to temporarily stop horizontal runs of masonry, and in building corner, Step-back masonry diagonally to lowest course previously laid. Do not "tooth" new masonry. Fill in adjacent course before heights of stepped masonry reach 1200 mm.

3.7 Cutting

1. Cut out neatly for electrical switches, outlet boxes, and other recessed or built-in objects.
2. Make cuts straight, clean, and free from uneven edges. Use masonry saw where necessary.

3.8 Building-In

1. Build in items required to be built into masonry by other trades.
2. Prevent displacement of built-in items during construction. Check for plumbness, alignment, and correctness of position, as work progresses.
3. Brace door jambs to maintain plumbness. Fill door frame with concrete.

3.9 Wetting of Bricks

1. Except during winter, wet clay brick having an initial rate of absorption exceeding 1g/min/100mm²; wet to uniform degree of saturation, to 24 hours before laying, and do not lay until surface is dry.

2. Similarly, wet tops of walls built of bricks qualifying for wetting, when recommencing work on such walls.

3.10 Support of Loads

1. Where concrete fill is used in lieu of solid units, use 20 MPa concrete to Section 03300.
2. Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.

3.11 Provision for Movement

1. Leave 5 mm space below shelf angles.
2. Leave 6 mm space and do not use wedges between tops of non-load bearing walls and partitions and structural elements.

3.12 Loose Steel Lintels

1. Install loose steel lintels. Centre over opening width.

3.13 Control Joints

1. Except as noted following, control joints required at maximum of 6000 mm o.c. in continuous walls having no openings, intersections or column locations. Refer to elevations for locations on exterior walls and advise Consultant of variances prior to executing the work. Control joints are not shown for clarity on the drawings for interior walls. If in doubt, request assistance from the Consultant.
2. At doorway locations, unless indicated otherwise on elevation drawings, use one side of doorway beyond lintel. Use building paper to prevent that end of lintel to bond.
3. Use standard block with concrete filled end core to form key. Line one side of core with building paper before filling core to prevent bonding. Complete vertical separation, full height and thickness of wall are required.
4. Stop masonry reinforcing at each side of the joints. Caulking specified in Section 07900.
5. At expansion joints in brick and veneer, install Rapid Expansion joint DA 2015, to leave vertical joint free of mortar to allow for horizontal expansion.

3.14 Horizontal Reinforcing

1. Horizontal reinforcing at 400 mm o.c. (every 2nd course), except solid walls greater than, or equal to 340 mm in width. At 340 mm, or greater, horizontal reinforcing at 200 mm o.c. (every course). Use prefabricated corners and tees at all intersecting load bearing walls.

3.15 Vertical Reinforcing

1. Install vertical reinforcing to size and spacing as shown on Drawings. Fill voids with 20MPa concrete.

3.16 Brick Ties

1. Install specified brick ties at maximum 800 mm horizontal and 400 mm vertical spacing.

3.17 Bonding

1. Walls of two or more widths: bond using metal ties in accordance with subsection 9.4 of CSA-A371.
2. Procedure approval by Architect.
3. In cavity walls, keep all cavity spaces free of mortar and debris by placing a wood strip on the ties. Retain strip on a wire line and pull up level and clean off droppings prior to placing next course of ties. Install mortar control device at 300 mm o.c. horizontally, in a staggered pattern so as to overlap each other on each side. Install in every 2nd course above foundation and shelf angles.

3.18 Sound and Fire Separation

1. All load bearing and non-load bearing partitions shall carry to the underside of structure above, except for allowing for deflection of structure.
2. All openings in partitions, even above ceilings shall be patched to maintain sound and fire separation.
3. In fire separations and sound separations, spaces between partition and structures to be firestopped or sound sealed under Section 07270.
4. Use U.L.C. labeled mortar for all patching in fire separations.

3.19 Dampproof Course Flashing

1. Install dampproof course flashing at ground floor elevation in all walls on foundations.

3.20 Testing

1. Masonry units to be tested in accordance with S304.1, Clause 15.1, for engineered masonry design, and in conformance with clause 15.1.2.
2. Mortar testing to be in accordance with S304.1, clause 15.2.
3. Grout testing to be in accordance with S304.1, clause 15.3.

3.21 Blockwork - General

1. Do not wet concrete block before laying.
2. Lay block with thicker end of face shell upward.
3. Lay interior block in running bond, concave tooled joints.

4. Use solid block or hollow block filled with concrete for top 2 courses under point bearing loads extending minimum 200 mm each side of bearing and where indicated.
5. Install special shaped units where indicated.
6. In block walls install continuous trussed wire reinforcement, as noted.
7. Where resilient base is indicated, tool the joints to within 100 mm of the floor. Cut joints flush behind the base.
8. Extend all walls/partitions to underside of steel/concrete deck unless shown otherwise on drawings and as required. Co-ordinate wall locations with structure above and prior to commencing work, advise Consultant of interference.
9. When masonry walls are not built at once, the ends of the walls are to be raked back at an angle, or terminated at a control joint. Tothing will not be permitted.

3.22 Mortar

1. Measure loose damp ingredients accurately by volume. Place water in mixer, add half volume of sand, add cement, add remainder of sand, add water for plasticity. Mix for at least four minutes. Keep mixer clean.
2. Incorporate colour into mixes in accordance with manufacturer's instructions.
3. Use clean mixer for coloured mortar.
4. Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into a ball. Allow to stand for not less than 1 hour nor more than 2 hours then remix with sufficient to produce mortar of proper consistency for pointing.

3.23 Concrete Core Fill

1. All concrete block walls shall have vertical grout core fill each side of openings and where shown and as detailed on the drawings.
2. Core fill in walls shall extend from bottom bearing surface to underside of bond beams or structure.
3. Grout core fill shall be placed with a trunk or chute in maximum lifts 2000 mm. Compaction shall be by interior mechanical vibrator. All fill shall be placed in accordance with CSA A23.1.
4. Fill minimum ½ block core each side of frame from foundation to underside of lintels of all door openings over 1 metre wide.
5. Provide inspection openings in base of walls to be grouted. Make good to match adjacent block work after inspection and approval by Engineer.

3.24 Reinforced Block Lintels

1. Install reinforced concrete block lintels at all openings where steel lintels are not indicated in accordance with structural details.
2. Install shoring and bracing as required to openings prior to placing lintel units and concrete fill.

End of Section

PART 1 - GENERAL

1.1 Related Work

- | | |
|---|-------------------|
| 1. Installation of anchors in concrete and masonry: | Section 04200 |
| 2. Structural Metal Framing: | refer to drawings |
| 3. Metal Decking: | refer to drawings |
| 4. Painting: | Section 09900 |

1.2 Scope

1. Provide all miscellaneous metal items except those listed above Under Article 1.1.

1.3 Reference Standards

- | | |
|-----------------------------------|---|
| 1. ASTM A167-99(2009) | Standard Specification for Stainless and Heat-Resisting Chromium - Nickel Steel Plate, Sheet and Strip. |
| 2. ASTM A325-09ae.1 | Standard Specification for Structural Bolts, Steel, Heat-Treated, 120/105 ksi Minimum Tensile Strength. |
| 3. ASTM A143/A143M-07 | Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement. |
| 4. ASTM A307-07b | Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength. |
| 5. ASTM A563-07a | Standard Specification for Carbon and Alloy Steel Nuts. |
| 6. ASTM A780/A780M-09 | Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings. |
| 7. CAN/CSA-S16-09 | Design of Steel Structures. |
| 8. CSA W59-03(R2008) | Welded Steel Construction (Metal Arc Welding). |
| 9. CSA-G40.20-04/G40.21-04(R2009) | General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels. |
| 10. ASTM A123/A123M-09 | Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products. |
| 11. CISC/CPMA 2-75 | Canadian Institute of Steel Construction/Canadian Paint Manufacturers Association-A Quick Drying Primer for Use on Structural Steel. |
| 12. CAN/CGSB-1.40-97 | Anticorrosive Structural Steel Alkyd Primer. |

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13. ASTM A53/A53M-07 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

1.4 Shop Drawings

1. Submit shop drawings in accordance with Section 01340 prepared and stamped by a Professional Engineer licensed to design structures in the Province of Ontario.
2. Clearly indicate materials, core thickness, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories.

PART 2 - PRODUCTS

2.1 Materials

1. Metals:
 - .1 **Steel sections and plates:** to CAN3 G40.21, Grade 350W for tubes and Grade 300W for plates and flat shapes.
 - .2 **Welding Materials:** to CSA W59.
 - .3 **Bolts and anchor bolts:** to ASTM A307, A325, and A563 as applicable.
 - .4 **Stainless Steel:** Type 302 or 304 alloy conforming to ASTM A167, No. 4 finish.
2. Primers, Coatings and Shop Painting
 - .1 **Interior Steel in Dry Areas:** Quick drying oil alkyd conforming to CISC/CPMA 2.75.
 - .2 **Exterior Steel, Interior Steel in Unheated Areas, Steel Embedded in Concrete:** Hot dip galvanized conforming to ASTM A123, minimum Z275 coating.
 - .3 **Galvanizing** of structural steel components and loose lintels: refer to Section 05120.
 - .4 **Galvanized Coating Touch-Up:** W.R. Meadows "Galvafruid" or Kerry Industries "Z.R.C." zinc rich coating or similar manufacturer containing minimum 90% zinc by weight.
 - .5 Apply one shop coat(s) of primer or coating as indicated above and according to manufacturer's recommendations. Do not prime aluminum, stainless steel or those components to be galvanized or encased in concrete.
 - .6 Use primer unadulterated, as provided by manufacturer. Paint on dry surfaces free from rust scale and grease. Do not paint when temperature is lower than 10 deg. Celsius and rising.
 - .7 Clean surfaces to be field welded; do not paint.
3. Fastenings
 - .1 Use nuts and bolts conforming to ASTM A307, A325, and A563 as applicable.
 - .1 For interior work, use cadmium-plated fastenings where other protection is not specified.
 - .2 For exterior work, use Type 300 or 400 stainless steel.

4. Anchors and Shims

- .1 For exposed anchorage of aluminum, if applicable, use stainless steel and otherwise to match metal anchored. For non-exposed work, anchors and shims may be galvanized steel.

5. Pipe

- .1 To ASTM A53, extra strong steel pipe for bollards.

6. Bituminous Paint

- .1 Alkali-resisting, use to insulate contact between dissimilar metals.

2.2 Fabrication

1. Build work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
2. Weld all connections where possible, and bolt where not possible unless indicated otherwise on drawings.
3. Use self-tapping shake-proof countersunk flat headed screws on items required to be assembled by screws or as indicated.
4. Where possible, work to be fitted and shop assembled, ready for erection.
5. Exposed welds to be continuous for length of each joint. File or grind exposed welds smooth and flush.
6. Weld all stainless steel by the Argon Arc Process. Grind smooth and polish joints, crevice-free, and flush without seams.

2.3 List of Miscellaneous Metal Fabrications

1. This Section includes, but is not limited to the following list. Note: **Galvanize all exterior items** and other items noted. Prime paint all interior items.
 - .1 Anchors, Bolts, Inserts, Sleeves for work in this Section.
 - .2 Bench Supports and Shelf Brackets.
 - .3 Hangers and Supports (for work in this Section).
 - .4 Lintels (if not by Structural Steel).
 - .5 Shelf Brackets and Hooks

PART 3 - EXECUTION

3.1 General

1. Supply and install all miscellaneous metal work indicated on the Drawings and not indicated in work of other Sections in addition to items listed below.

3.2 Fabrication & Erection

1. Erect metal work square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
2. Insulate metals, where necessary, to prevent corrosion due to contact between dissimilar metals and between metals and masonry or plaster. Use bituminous paint, butyl tape, building paper or other approved means.
3. Provide suitable and acceptable means of anchorage, such as dowels, anchor clips, bar anchors, expansion bolts and shields, toggles.
4. Make field connections with items specified in Articles 2.1.4 and 2.1.5 or weld to CSA S16.
5. Hand items to be cast into concrete or built into masonry over to appropriate trades together with setting templates.
6. Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection.
7. Touch-up galvanized surfaces with zinc primer where burned by field welding. Spray or brush apply a minimum of three (3) coats of zinc-rich paint to achieve a dry film thickness of 8 mils. Apply a finish coat of aluminum paint to provide a colour blend with the surround galvanizing.

3.3 Wall Benches and Upper Shelf

1. Steel Angles, Steel Channel, Flat Bar Steel, Steel Rod as indicated on details.
2. Use secure round head fasteners or countersink holes for flat head screws.
3. Prime paint: Galvafroid.
4. Chamfer cut ends of Rod 2 mm

3.4 Railings and Guards

1. Provide railings and handrails, as shown on Drawings.
2. Galvanize all exterior railings after fabrication.
3. Wall brackets, as shown, at 1200 mm o.c. maximum.
4. Set railing standards in concrete with heated liquid sulphur to fill hole. Remove overflow immediately.

3.5 Vanity Brackets

1. Angle steel frame, as shown on drawings - shop prime painted.

3.6 Wall Brackets and Hooks

1. As shown on Drawings - prime paint.

3.7 Bollards

1. Supply and install galvanized steel bollards as shown on Drawings. Bollards shall be 150 mm x 9.5 mm thick wall at 1200 mm high, seamless steel pipe. Install 1200 mm into a concrete foundation. Fill bollard with 25 Mpa concrete and round top. Round top of footing also. For number of Bollards required - refer to Drawings.

3.8 Galvanized Steel

1. Galvanize steel members, fabrications, and assemblies after fabrication by the hot dip process in accordance with ASTM A123, minimum Z275 coating.
2. Galvanize bolts, nuts and washers and iron and steel hardware components in accordance with ASTM A123.
3. Safeguard products against steel embrittlement in conformance with ASTM A143.
4. Design features which may lead to difficulties during galvanizing shall be pointed out prior to dipping.
5. The composition of metal in the galvanizing bath shall be not less than 98.0% zinc.

End of Section